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# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

## Power line-up . . . Gold Comet Power!

These Reo Gold Comet-Powered trucks in the fleet of the Emge Packing Company, Inc., Fort Branch, Ind., log 1,000 miles a week, averaging eight miles per gallon of gasoline. Payloads? Twelve tons with the Reo E-22RT tractors, seven to eight tons on the E-22C straight trucks. "Best we have ever used," says Walter Emge. "Our plan is to replace all equipment of the E-21 and E-22 capacities with new E models." Get the Reo Gold Comet story from your nearest Reo dealer today. It's a new chapter in trucking history!

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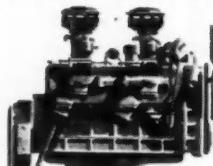


# NEW!



## DODGE 4-TONNER "Job-Rated"

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It's the new Dodge 4-tonner . . . "Job-Rated" to haul big loads at low cost!

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Ask your Dodge dealer to show you this "Job-Rated" load-lugger . . . soon!

For low-cost transportation, switch to

## DODGE "Job-Rated" TRUCKS

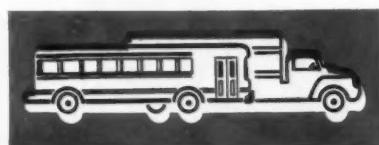
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**1950 FLEET OPERATORS' REFERENCE**APRIL 1950  
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TRUCK & BUS MAINTENANCE****MAINTENANCE SPECIFICATIONS****TRUCKS**

Autocar	67	ENGINES	
Brockway	68	Continental	92
Brown	69	Cummins	92
Chevrolet	70	Hercules	93
Corbitt	71	Buda	94
Crosley	91	Hall-Scott	95
Dart	72	Waukesha	94
Diamond T	73		
Dodge	74	BUSES	
Duplex	75	ACF Brill	96
Federal	76	Aerocoach	97
Ford	77	Beaver	97
Freightliner	69	Beck	98
FWD	78	Cub	98
GMC	79	Fitzjohn	99
International	80	Flexible	99
Kenworth	81	GMC	100
Linn	72	Kalamazoo	101
Marmon-Her	82	Reo	101
Milford	83	Southern Coach	102
Oshkosh	84	Transit	102
Peterbilt	83	Twin Coach	103
Reo	85	White	104
Sterling	86		
Studebaker	87		
Walter	88		
Ward-LaFrance	89		
White	90		
Willys	91		
		PASSENGER CARS	
		Fleet Models	105

**INSTRUCTIONS AND CHARTS**

Wear Limits of Axles, Brakes, Engine Parts.	66
Trouble Shooting Guide	106
Truck Component Parts Table	112

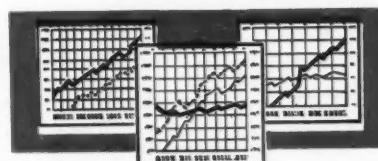
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**SECTION TWO  
INDUSTRY STATISTICS**

1948-'49 Trailer Registrations	115
Trailer Production by Type, by Year	115
U. S. Truck Production by Makes	116
Truck Factory Sales by GVW	116
46 Years of Truck & Bus Production	116
Bus Deliveries by Type	116
Truck Production by Makes (Summary)	117
Truck Production by Months	117
Revenue Bus Factory Sales	117
New Truck Registrations, by Make, by GVW	117
'49 New Truck Registrations by States	118
New Truck Registrations by Makes by Years	118
Wholesale Value of Repair Parts	118
New Truck Registrations by Years	118
New Truck Registrations, January '50	119
Census of Trucks & Trailers	119
Total Truck Registrations by States	120
Truck Factory Sales, January '50	120
Trucks in Use by Makes, by Years	120
Total U. S. Truck Registrations	120
Truck Dealers, Wholesalers, Repair Shops	120

**DEPARTMENTS**

Conference Corner	6	Washington Runaround	35
Service Notes	14	Laugh It Off	39
The Overload	19	Free Publications	48
Bulletin Board	23	New Products	49
CCJ News Report	27	Fleetman's Library	154
Detroit Dispatch	31	Introducing	178

**OFFICES**

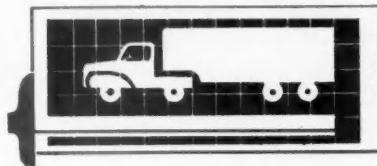
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## SECTION THREE SELECTION & OPERATION



AASHO Standards .....	121
Truck Tire Data .....	122
Safety Equipment Required & Permitted .....	123
Power Ratings—Truck & Bus Engines .....	126
Transmission Ratios .....	128
State Size & Weight Limits .....	130
Diesel Fuel Specifications .....	133
Third Axle Specifications .....	134
Bus Specifications Table .....	136
Transportation Engineering Formulas .....	138
Truck Specifications Table .....	139

## SPECIAL ARTICLES

Willys Adds F-Head Engine .....	158
Diamond T's New 14,500 lb Chassis .....	164
C.O.D. System Nets Quick Cash .....	176
Salt Spreaders in Over-Age Buses .....	186
Progress Report on ATA Equipment Committee .....	208
Factors Affecting Torque Converter Operation .....	272

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Whether you need a special body like this or a standard dump truck unit, put in a call to your St.Paul Distributor. He's a dump unit specialist . . . and ready to serve you!

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## Lubricants and Fuels FOR THE TRUCKING INDUSTRY

# CONFERENCE CORNER

PRESENTING FACTORY ENGINEERS' VIEWS ON TIMELY SUBJECTS OF INTEREST TO FLEETS

## **Subject: Compression Rings**

## **Question: What Causes Failure? . . .**

## **How Can It be Corrected?**

Manufacturers blame high pressures and temperatures, inadequate lubrication, poor fuels and lubricants, and detonation for much of this top ring trouble . . . suggest use of chrome-plated rings and reduction of loads.

### **Careful Ring Selection Should Help**

by H. G. Braendel  
Chief Engineer

*Wilkening Mfg. Co.*

THE FAILURE of the top ring occurs because of detonation at high engine speeds which in many cases is not audible due to the high intensity of other engine noises. The top ring collapses during detonation and finally breaks in fatigue. Higher fatigue resisting material such as our chrome plated C90 rings will extend the life but extremely high side wear may still occur because of the high relative motion between the ring and the sides of the piston groove as it collapses and rotates in the groove. It is very possible that leaving out the top ring as reported will eliminate the trouble in some cases this in effect reduces the compression ratio by .1 or .2, which may be enough to bring the operation under the critical range. The second ring, of course, also operates in the somewhat cooler region of the piston.

If this analysis is correct, the difficulty will be eliminated by increasing the octane number of the fuel employed by a fleet which is troubled by this type of failure. Piston ring design will not eliminate the failures but will extend the life. We are, for instance, making up some steel chrome plated top rings experimentally to determine what beneficial effects this will have in respect to this type of failure. Using deep section rings with high strength materials having a high modulus of elasticity should also help, because collapsing of the ring occurs at higher pressures or more severe detonating conditions.

### **Good Grades of Fuel and Oil will Cut Failures**

by Paul S. Lane  
Director of Research

*Muskegon Piston Ring Co.*

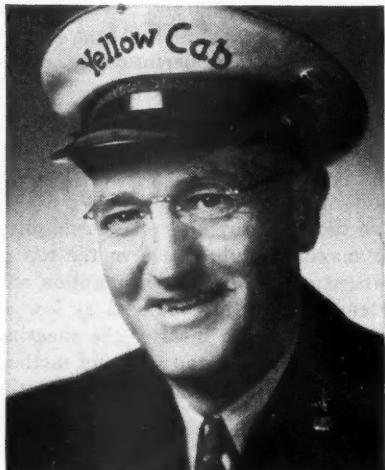
INSTALATION of chrome plated top rings is the best and most economical first step to take in combatting ring wear. Such rings, if made from higher strength irons, have added resistance to breakage. However, certain con-

ditions can come about which are abusive enough to shorten their life. We believe that in the great majority of cases, ring breakage is preceded by sticking of the ring in the groove. We believe further that fuel of poor grade or "dirty," resulting in excessive combustion chamber and ring groove deposits, causes ring sticking. Considerable evidence supports the belief that certain combinations of fuel and lubricating oil can foul up a new engine in as little as 5000 miles as a result of sludging and oxidation. Bus operation with frequent idling and stop and go driving is conducive to more rapid sludging. Is it not true, too, that some fleet operators still use low-quality fuel and cheaper grades of lubricating oil, where actually better economy would be had if premium fuel and heavy-duty type oil were used.

It would seem likely, too, that detonation is a factor in ring breakage, particularly in the type of operation where the fuel is operated at low engine speeds with wide open throttle. Any condition which results in the accumulation of a great deal of heat in pistons and cylinder walls will shorten ring life. Detonation usu-

(TURN TO PAGE 10, PLEASE)

# "battery ever built..."



EARL BENNET, Driver  
Yellow Cab Company  
San Francisco, Calif.



L. A. SCHROYER, Supt. of Maintenance  
Yellow Cab Company  
San Francisco, Calif.

" 'Sta-ful is the battery a taxicab driver needs to keep on schedule. When you keep battery plates fully covered, you get rid of the biggest trouble-maker we had. It's the best battery I ever saw.' This statement of Earl Bennet shows how our drivers go for Sta-ful." L. A. Schroyer, Supt. of Maintenance, Yellow Cab Company, San Francisco, Calif.

## HERE'S WHAT Sta-ful DOES FOR YOU

- 1 Needs water only 1/3 as often.
- 2 Helps keep plates fully covered for abundant starting power.
- 3 Reduces time and bother of battery servicing—lasts longer too.
- 4 Helps reduce operating costs by keeping fleets on schedule.



## Conference Corner

Continued from Page 6

ally means higher temperatures and pressures, all being in the direction of rapid deterioration of engine components.

Obviously, the solution lies in improved grades of fuel and lube oil to keep engine deposits to a minimum. The same is true for regular adjustments of the distributor and the entire ignition system. Air cleaners and oil filters are vital to good engine operation and must be serviced at regular periods. Particularly is this true for rear engine buses which require extra precautions to have an adequate supply of clean air and good cooling.

Our company has available heavy-duty type chrome plated compression rings made from high-strength alloy iron, and also oil control rings of the wide-slot streamline type to give maximum resistance to plugging. These same type rings are also available from several other reputable ring producers.

### Chrome-Plated Top Rings Withstand Abuse

by G. E. Leutwiler  
Chief Service Engineer

*McQuay-Norris Mfg. Co.*

THE reason, in our opinion, for the rapid wear on top compression rings is that they are located in the area where the greatest pressures are momentarily experienced when the explosion occurs. Likewise they are subjected to the highest temperature and marginal lubrication. Therefore they operate under the most adverse conditions and receive the most abuse. Consequently there is bound to be more rapid wear and occasional failure from breaking.

When operating conditions are not too severe due to overloading and high speed, the top ring groove wear and ring breakage usually does not become critical until the second 50- or 60,000 miles of operation. In other words, on a rering job if the wear in the top piston grooves has reached .005 to .008, the groove should be recut and a groove filler installed. Otherwise the new ring will not be properly supported so that vibration will be violent enough to either pound out the groove rapidly or break either the ring or the piston lands.

When breakage of either the ring or land occurs, the small pieces quickly wear away themselves or wear up through the top land so that they disappear by going out through the exhaust valve.

During the war years considerable work was done on rings for aircraft engines to overcome a similar problem. Centrifugally cast high tensile rings were chrome plated and used effectively in high output engines. We made millions of these rings, but our metallurgists found that for automotive service electric furnace cast iron was the superior material because of its heat stability.

Our electric furnace ring iron was made in many ways to improve scuffing and wear resistance. By increasing the phosphorus and reducing the silicon we accomplished a great deal to reach our goal. For long life under conditions of dust in the intake air we furnish our top rings chrome-plated.

### Limit HP to 80% of Rating to Reduce Trouble

by M. W. Marion  
Chief Engineer

*Ramsey Corp.*

THE industry has always been conscious of a certain amount of top ring and top groove trouble in heavy-duty internal combustion engines. The top ring difficulty is basically due to a combination of fire, excessive heat and lack of lubrication at the top part of the cylinder. Many improvements in piston rings, pistons, cylinders, and cylinder heads over a long period of years has resulted in better operation. However, this has been offset to a large extent by the engine designers' constant struggle for more horsepower from a smaller space. In general top ring and top groove trouble could be eliminated almost over night if operators would limit the horsepower out-put to 80 or 85 per cent of the rated horsepower. A large factor in the actual usable rating of an engine is the allowable temperature of the top piston ring and piston crown. When the horsepower output is such that this critical temperature is exceeded, then we are bound to have difficulty. Because of competition some truck and bus engines may be over rated or may not be big enough for the chassis in which they are used. Also you may well know that the satisfactory performance of an engine is greatly influenced by the driver.

With our products we are not too conscious of our top ring and top groove trouble in any phase of commercial operation. We believe that one reason for this is our principle of piston ring design. We design our piston rings so that blow-by and oil consumption are controlled for maximum lubrication in the top of the cylinder consistent with good oil consumption and so that top ring temperatures are reduced as low as possible. Our piston ring design involves the shearing method of oil control rather than the scraping method which minimizes the possibility of drying up the cylinder wall.

### Porous Chrome Rings, Improved Pistons Help

by Lee Doty  
Manager of Fleet Sales

*Koppers Co., Inc.*

WE are certainly aware of the problem of corrosion, erosion and rapid wear of top compression rings and because of this situation and have developed Porous Chrome rings for use in top grooves, as well as K-Spun, a new high strength cast iron for use in all rings. The necessity for improvements in piston rings has been brought about by several factors—the increase in compression ratios, the reduction of engine weights as compared to horsepower, and the change in both fuels and lubricating oils during the past several years.

There has been one other improvement in design that is helping to correct this problem and that is the manufacture of pistons using a Ni-Resist grooved belt built into the piston and in which the top groove is machined. Our company is manufacturing the centrifugal castings for this ring belt and sells them to the piston manufacturers who furnish the completed piston to the trade. The stronger support furnished the ring by this belt has decreased wear and breakage of top rings to a minimum. We feel that this development will become rapidly popular for all heavy-duty uses.



# DEPENDABLE IN ALL SEASONS

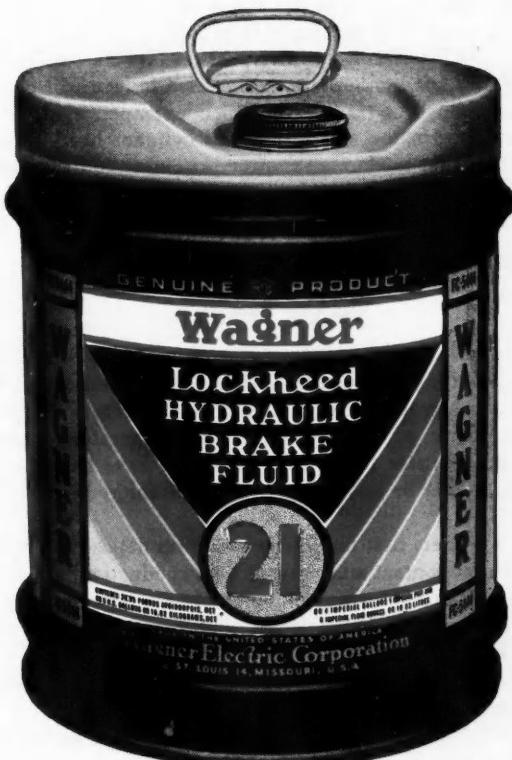
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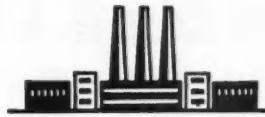
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# SERVICE NOTES

## Briefed for Fleets From Manufacturers' Bulletins

### ● IHC ●

#### IHC Slo-Roto Exhaust Valves

With RED and Continental 4-6586 engines using Slo-Roto exhaust valves seat width of the valve insert ring must be increased. This increased width of 3/32 to 1/8 in. (1/8 in. preferred) should be utilized when making installation of the Slo-Roto valves in RED engines. (Specified valve seat width for RED engines not using the Slo-Roto feature is 5/64 to 7/64 inch.)

The wider seat on the valve insert ring will provide increased valve life due to the larger contact area obtained when the valve is in a closed position, thus allowing a greater amount of heat to be transferred away from the valve head.

In conjunction with the above subject it is of utmost importance that the valve insert rings be installed so that the insert ring is fully pressed into its seat in the cylinder head, otherwise, early valve failure will occur. Maximum heat transfer is dependent upon a full contact between the insert ring and cylinder head. Make certain that no foreign matter prevents the insert ring from seating fully upon installation.

### ● FWD ●

#### Valve Troubles

Valves require grinding at various intervals during the engine service life. These intervals cannot be specified exactly because many variable factors enter the picture, often without the engine operator's knowledge. Of these factors, the following have been found to a greater or lesser degree to make for reduced valve life.

- (a) Fuels that break down to form deposits that impair seat contact and prevent heat conduction.
- (b) Deposits from either fuels or oils that accumulate on the valve stems and cause sticking and burning.
- (c) Oil not reaching rocker arms due to clogged lines, improper fitting connections and so on.
- (d) Shutting down a hot engine without idling for a few minutes. Exhaust valves that happen to be off the seat when engine stops may warp so that burning occurs on restarting.
- (e) Tappet clearances not properly maintained to cold settings recommended.
- (f) Lean mixtures due to improper carburetor or adjustment.
- (g) Pre-ignition due to wrong plugs, carbon deposits, excessive operating temperatures.

### ● Federal ●

#### Crankcase Ventilator Valves

Occasionally we find the field has either removed the crankcase ventilator valve from the engine, thus eliminating any means of ventilation, or the servicing of the valve and connecting lines has been neglected.

The ventilator valve should be taken apart every 250 hours or 10,000 miles and washed in a varnish solvent. The connecting lines and fittings must receive the same treatment.

When reassembling valve, 1B1270, be sure the metering piston is inserted in the body with the small tip in the direction of the arrow stamped on the outside of the body. The same arrow also indicates the position of the valve in the ventilating system in relation to the intake manifold. The valve is always mounted in a *vertical position* and the end having the external thread is connected to the intake manifold. The opposite end connects to the opening provided at the tappet cover.

### ● Plymouth ●

#### New P-19 Clutch

A new 9 1/8 in. Borg and Beck clutch is used in the P-19 Models. The disc assembly of the new clutch can be identified by measuring the outside diameter which is 9 1/8 in. instead of 9 1/4. The pressure plate can be identified by the use of six heavier springs rather than nine, as on the 9 1/4 in. Borg and Beck. The new parts consist of the disc facings, the pressure plate casting and the pressure plate springs. All other parts are interchangeable with the 9 1/4 in. Borg and Beck Clutch. The 9 1/8 in. clutch can be adjusted on the Miller Tool fixture, C-585, with spacer No. 20 as used for the 9 1/4 in. clutch.

### ● Studebaker ●

#### Engine Noise—9G, 2R5, 2R10, 2R15

Engine noise in a few cases has resulted from interference between the oil pan baffle and the cheek of the No. 5 crank on the crankshaft. In production, a notch and a depression have been placed in the baffle in the oil pan to provide clearance for the crank cheek at this location.

In the field it will be necessary to remove the oil pan, notch the baffle and bend it downward at the point of interference.

(TURN TO PAGE 210, PLEASE)

# The OVERLOAD

EDITORIAL COMMENT

## Figures Don't Lie . . . But Some Remarkable Fellows Can Figure

LAST month on this page we highlighted some interesting developments in New Jersey wherein a recent survey indicated that only 50 miles of the State's 1780 trunk highway network were found in bad condition, despite a possible axle loading of 34,300 lb. We believed it of national significance.

This month we'd like to invite your attention to some developments across the border in New York state. While the shenanigans there are of an entirely different nature, their significance on a national basis is equally important since history reveals that New York state has frequently been used as a sounding board for developments to come in other states.

• • •

Late last year a resolution (#170) was introduced in the state Assembly by Assemblyman D. Mallory Stevens calling for an investigation of truck taxes based on several "Whereases," one of them being this typically rail-inspired beauty: "Whereas common carriers using the public highways derive far greater benefit from these highways than the ordinary citizen and make no special contribution to their construction or the cost of their rights of way." In due time the resolution was adopted, a legislative committee set up to investigate, and hearings have been under way.

But the development that caught our eye was this one: Up at the State Capitol is a group known as the Citizens Public Expenditures Survey of Albany. We are advised on reliable authority that this group is primarily interested in real estate taxes, and that it is considered a responsible organization which

regularly campaigns on the laudable subject of keeping the State budget for government expenses both balanced and down.

It was, therefore, only natural that this group seize the opportunity to stave off increased real estate taxes by hitting on the idea that trucks should pay a higher share of the state's *total income*. To further this aim they retained a firm of consultants on public administration and finance known as Griffenhagen and Associates, to study the matter of truck taxes and the part they pay in highway costs. We are advised that this firm, in years past, has made similar studies for at least one railroad company, but we are the last to hold that against them.

The Griffenhagen report, now on press, numbers no less than 400 pages covering such comparisons as ton-mile rates and a long section on tax diversion and subsidy. Since the report had not been published at the time this issue went to press we had not seen it. But if we may rely on the usually authoritative *New York Times* (Feb. 25, 1950) we'd like to quote just one sentence from the report which the *Times* saw fit to include in its editorial: "A big truck that paid an annual license fee of \$3,179 in Michigan would have to pay only \$140 in New York."

• • •

It is statements like that that make our truck operator friends in New York see red, and which we believe will, make others across the nation turn

(SORRY—We'll have to continue on page 256)

Bart Rawson  
Editor

**It's here!  
the NEW  
HI-MILER  
RIB  
TRUCK TIRE**



**20%-25% MORE mileage at no extra cost!**

Now Goodyear presents a great new truck tire that will give you more mileage, more traction, more safety in today's highway hauling service. Improved throughout, this new Hi-Miler Rib Truck Tire delivers *premium performance at no extra cost!*

**HERE'S WHY**

**More miles**—20% to 25% more by road tests. New multi-rib, flatter and more compact tread design puts more rubber on the road, insuring longer, slower wear.

**More even wear**—from continuous shoulder

ribs in new cooler-running design, strongly buttressed for slow, even wear.

**More non-skid**—new zigzag ribs with more road-grabbing edges and new, flatter tread contour give greater skid-resistance.

**Most for your money**—highest quality construction throughout. New tougher, cooler-running rubber compounds, super-strong rayon cord body, spiral-wrapped dual beads all combine to make the new Hi-Miler a tire that will give you greater mileage and more recaps with far greater freedom from blowouts and road failures. Get it now—at all Goodyear dealers'.

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Buy and  
Specify

**GOOD**  **YEAR**—it pays!

Hi-Miler—T.M. The Goodyear Tire & Rubber Company

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

# CCJ REPORTS

on News of the Industry

## Third Highway Congress Surveys Transport Future

Representatives of national, state and local highway users groups meet in Washington's Hotel Mayflower April 25, 26 and 27, at the coming Third Highway Transportation Congress. The 30-million dollar question—will the public policies affecting highway transportation be as sound and well conceived during the coming half century as they generally have been during the industry's first 50 years? The program for the Congress will be one of the most interesting and significant ever arranged on highway matters, according to Director Arthur C. Butler, of the National Highway Users Conference, the organization sponsoring the meeting.

These Congresses, held every two years, give leaders in these groups and the industries that supply them a unique opportunity to express themselves on the policies which will help determine highway transportation's future. The importance of these policies is indicated by the fact that highway transportation is a \$30 billion annual business, responsible for one out of every seven jobs in the nation.

"Fifty Years of Highway Transportation Progress"

is the theme of the April sessions. The keynote address by N.H.U.C.'s Chairman Albert Bradley, executive vice president of General Motors, will examine highway transportation's opportunities as it begins a second half century of service to the American public. Like other nationally known leaders who will address the Congress, he will also look back and point to the ways in which the automotive industry has enriched America's life and broadened its economy during its first half century.

Other speakers already announced include Lee R. Jackson, president of the Firestone Tire and Rubber Co., who will speak on "Highway Transportation of Tomorrow," and Dr. J. O. Christianson, famous Minnesota civic leader, educator and agriculturist, whose topic will be, "The Roads Americans Travel."

During the course of the Congress such problems as adequate planning to meet growing highway and street needs, equitable taxation, protection of highway taxes from diversion to other purposes, and many other matters will come before the delegates. These will be examined from the viewpoint of the actual user of the highway, as well as from that of officials and lawmakers.

(TURN TO PAGE 192, PLEASE)

## DATES and DOINGS

- APRIL 10-14—Fleet Supervisors Training Course, University of Wisconsin, Madison, Wis.
- APRIL 14-15—Louisiana Motor Transport Assn. Annual Convention, Bentley Hotel, Alexandria, La.
- APRIL 17-21—Fleet Supervisors Training Course, University of Tennessee, Knoxville, Tenn.
- APRIL 22-23—Motor Vehicle Assn. of Georgia Annual Convention, General Oglethorpe Hotel, Savannah, Ga.
- APRIL 24-28—Fleet Supervisors Training Course, University of Michigan, Ann Arbor, Mich.
- APRIL 24-28—Fleet Supervisors Training Course, University of Maryland, College Park, Md.
- APRIL 25-28—New England Regional Automotive Show, Inc., Mechanics Building, Boston, Mass.
- APRIL 26-27—3rd Highway Transportation Congress of National Highway Users Conference, Mayflower Hotel, Washington, D. C.
- APRIL 27-29—American Trucking Assns. National Tank Truck Carriers Conference, Palmer House, Chicago, Ill.
- MAY 1-5—Fleet Supervisors Training Course, Iowa State College, Ames, Iowa.
- MAY 4-6—Texas Motor Transp. Assn. Annual Convention, Bunker Hotel, Dallas, Texas.
- MAY 8-12—American Trucking Assns. Spring Meeting, Hotel Morrison, Chicago, Ill.
- MAY 8-12—Fleet Supervisors Training Course, So. Dakota State College, Brookings, S. D.
- MAY 11-13—Washington Motor Transport Assn. Annual Convention, Olympic Hotel, Seattle, Wash.
- MAY 15-19—Fleet Supervisors Training Course, Northeastern University, Boston, Mass.
- MAY 18—Rhode Island Truck Owners Assn. Annual Convention, Narragansett Hotel, Providence, R. I.
- MAY 22-26—Fleet Supervisors Training Course, University of Connecticut, Storrs, Conn.
- JUNE 1—Central Motor Freight Assn. Annual Convention, Palmer House, Chicago, Ill.
- JUNE 1-3—Utah Motor Transport Assn. Annual Convention, Hotel Utah, Salt Lake City, Utah.
- JUNE 4-9—Society of Automotive Engineers Summer Meeting, French Lick Springs Hotel, French Lick, Indiana.
- JUNE 5-9—Fleet Supervisors Training Course, University of Kentucky, Lexington, Ky.
- June 12-16—American Society of Mechanical Engineers (4th Annual Materials Handling & Exhibit) International Amphitheater, Chicago, Ill.
- JUNE 12-16—Fleet Supervisors Training Course, Marshall College, Huntington, W. Va.
- June 19-23—American Society of Mechanical Engineers, Hotel Statler, St. Louis, Mo.
- JUNE 23-24—Pennsylvania Motor Truck Assn. Annual Meeting, Penn Harris Hotel, Harrisburg, Penna.
- JUNE 26-30—Fleet Supervisors Training Course, University of New Hampshire, Durham, N. H.
- July 10-14—Fleet Supervisors Training Course, Northwestern University, Evanston, Ill.
- Aug. 14-16—Society of Automotive Engineers (West Coast meeting) Biltmore Hotel, Los Angeles, Calif.
- OCT. 2-6—American Trucking Assn. Annual Meeting, Waldorf-Astoria Hotel, New York.
- DEC. 4-8—Automotive Service Industries Show, Navy Pier, Chicago.



**50-TON LOAD . . .**

**TOUGH ROAD . . .**

*Hoobler Undercarriage  
takes them easy!*



The Hoobler-equipped trailer pictured above is hauling 7,231 feet of pine logs, weighing almost 100,000 pounds. The punishing, twisting travel through this unpaved, heavily wooded area is enough to stop an ordinary trailer in its tracks.

But not this Hoobler-equipped trailer. For the Hoobler Undercarriage causes the trailer to "follow through" behind the tractor . . . to snake

Hoobler-equipped lumber trailer now built as standard unit (Model T-4000) by Birmingham Manufacturing Co., Birmingham, Ala.

around difficult turns with "outrigger" stability for the load.

That's not all. The Hoobler Undercarriage's nine-foot axle spacing affords ideal weight distribution and prevents bogging down. There's minimum load shifting, because flexible, multiple support absorbs practically all road bumps.

Simple in design and construction, the Hoobler Undercarriage is quickly inspected or serviced. It is designed for use with standard brakes, axles, wheels and tires.

Vans, high-sides, tankers and flat-tops (28 feet and over) use this self-steering undercarriage—off-the-road and on-the-road. And at lower operating cost per ton-mile!

Find out how the Hoobler Undercarriage can help *your* jobs roll easier, safer, and save you money, too. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

# UNION METAL

DESIGNERS AND PRODUCERS OF STEEL PRODUCTS SINCE 1906

*Builder of The Hoobler Undercarriage*



# DETROIT DISPATCH

by LEN WESTRATE Detroit News Editor

## California Muffler Noise Tests Watched

Truck manufacturers are watching the outcome of tests being made in California on muffler noise on diesel units. Basically the muffler problem is one of cost. It is entirely possible to equip a truck with a muffler that will maintain a suitable noise level, but the cost is considerably higher and fleet operators object to paying it, according to manufacturers. They point out, also, that some drivers are a problem because they like the snort and roar of a poor muffling system, and have been known in some cases even to punch holes in the system to get the desired sound effects. The general feeling is that if operators and manufacturers do not get together on a satisfactory muffler, legislation is bound to come that will do the job for them.

## AMA Defines G.V.W.

Since the general adoption of gross vehicle weight ratings, there has been some confusion in the minds of many operators about just what the term means and why it was adopted. Automobile Manufacturers Association now has printed an interpretation of the manufacturers maximum g.v.w. rating. Copies are available upon request. It explains just what the rating means and gives the history behind its adoption including the relationship to state licensing procedures. Address of AMA is 320 New Center Building, Detroit 2, Mich.

## The K-H Braking System

Kelsey-Hayes is making good progress on its new auxiliary unit for use with vacuum brake systems on tractor-trailer combination. Initial installations are being made in the Detroit area to get more information on adapting the unit to all types of trailers. The production program is not yet far enough along to offer the auxiliary system on a national basis but, as more operating experience and manufacturing facilities are obtained, distribution will be widened.

The K-H auxiliary system, which has been under test by two large fleets for more than a year, is designed to apply automatic initial braking on the rear wheels of the trailer unit before the tractor brakes come into play, thus guarding against jack-knifing. It consists of a pedal switch, load switch, relatively small vacuum reservoir, a quick acting vacuum switch, and a third vacuum chamber. The regular vacuum braking system of the trailer remains intact.

The first half inch of foot pedal travel actuates the system through the electrical switch which opens the quick-acting valve, applying brake pressure through full vacuum of the small extra reservoir. The pull-rod is linked through an equalizer to the regular braking system which automatically goes into action with further movement of the brake pedal. A slight touch of the pedal gives the "feathering" action on rear brakes ordinarily attained through a hand lever on the steering column. An added feature is that for heavier loads, a selector switch on the instrument panel may be set to use both the auxiliary reservoir and the main system tanks for extra power. On tandem axle installations a larger reservoir and an extra chamber are used.

## Ordnance Okays a 24-Volt Ignition System

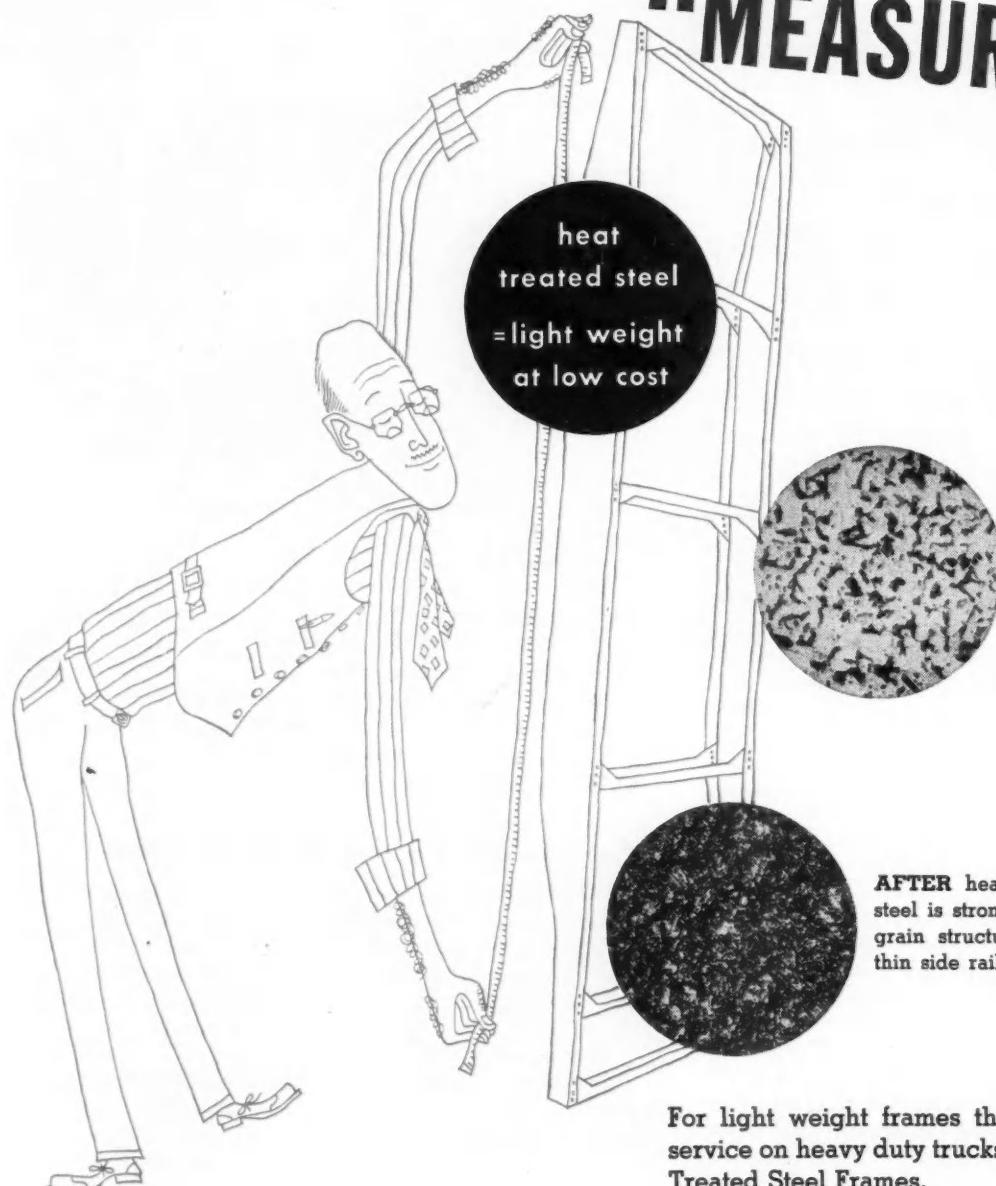
Military services appear to be winning out in their insistence on 24-volt ignition for Army vehicles. Industry manufacturers, while not actively opposing the high voltage systems had held that such equipment was not available and that further time would be required to develop it. However, at least one manufacture of electrical equipment has developed a 24-volt system that has passed severe Ordnance Department tests, and has been accepted as original equipment on military vehicles. General opinion, however, is that the high voltage systems are not necessary in commercial vehicles and would be ruled out by the extra cost. There also might be some problems with standard lighting equipment, such as bulb filaments.

## GMC's "New Horses" Gets Results

GMC Truck currently is running a novel campaign aimed at getting fleet operators to bring their GMC trucks in for tune-up servicing. They are advertising "new horses" at \$1.17 a piece. Essentially the program consists of a chassis dynamometer test at one of the 17 branches thus equipped in various parts of the country. After a complete tune-up, a new dynamometer reading is made and the charge is \$1.17 for each horsepower gained from the tune-up. Gains up to 15 horsepower are charged for at the established rate, and any in excess of that are free. Reports from the field show many cases of even relatively new trucks obtaining considerable improvement from the program.

(TURN TO PAGE 252, PLEASE)

# HOW DO YOUR FRAMES “MEASURE UP”?



**BEFORE** heat treatment,  
note the coarse-grained  
structure of the steel.

**AFTER** heat treatment the  
steel is stronger, with a fine  
grain structure that permits  
thin side rail design.

For light weight frames that measure up in years of service on heavy duty trucks, you can't beat Parish Heat Treated Steel Frames.

These photos tell the story. By using *heat treated* steel, we can design thin section side rails to hold down tare weight.

For frames that give you maximum strength and resistance to fatigue—at no sacrifice of payload—ask your truck manufacturer about Parish *Heat Treated* Steel Frames.



**USEFUL BULLETIN** for  
**MAINTENANCE MEN**... To give your  
men in the shop the "know how" they need  
for welding heat treated steel frames,  
ask for the Parish Welding Bulletin.  
It gives useful hints on kinds of weld  
wire to use, positioning of work, etc.



**ONLY PARISH**

**STEEL**



**PARISH PRESSED STEEL COMPANY**  
subsidiary of Dana Corporation **READING, PA.**

Western Representative: **F. SOMERS PETERSON CO.**  
524 Folsom St., San Francisco, Cal.  
413 East 12th St., Los Angeles, Cal.

**HEAT TREATED HEAVY DUTY FRAMES GIVE YOU THE STRENGTH OF STEEL  
at no sacrifice of payload!**



# WASHINGTON RUNAROUND

by GENE HARDY Washington Correspondent

## \$66 Million Replacement Program

A breakdown of proposed military vehicle purchases during the 12-month period beginning July 1 reveals an intention to purchase a wide selection ranging from over 3,000 jeeps to 4 new 10-ton 6 x 6 trucks. These prototype 10-ton jobs will cost an estimated \$60,000 each.

The overall motor vehicle procurement program, calling for 18,704 vehicles estimated to cost about \$66 million, is part of the auxiliary vehicle-replacement plan. The only exceptions are the 10-ton vehicles and 485 small tank trailers.

Details of the proposed program are as follows:

	Quantity	Unit Cost
Technical vehicles		
Ambulance, 3/4-ton, 4 x 2.....	16	\$3,375
Carrier, personnel, 4 x 2.....	1,000	1,219
Truck, 1/4-ton, 4 x 4.....	3,467	2,689
Truck, 3/4-ton, 4 x 4.....	1,752	4,511
Truck, 2 1/2-ton, 6 x 6.....	3,285	6,424
Truck, 5-ton, 6 x 6.....	562	15,324
Trailer, 1 1/2-ton, 2-wheel, tank, water .....	485	1,000
Truck, 10-ton, 6 x 6.....	4	60,000
Commercial vehicles		
Truck, 1/2-ton, 4 x 2.....	3,474	\$1,282
Truck, 1 1/2-ton, 4 x 2.....	1,325	1,836
Truck, 2 1/2-ton, 4 x 2.....	2,615	2,575
Truck, 5-ton, 4 x 2.....	619	4,348
Bus, 37-passenger, 4 x 2.....	100	14,100

The unit costs for tactical vehicles include concurrent spare parts, while those for the commercial-type vehicles do not.

## Federal Plan on Sizes and Weights

Dropped in the congressional hopper in recent weeks was a measure which would put the Federal Government squarely into the arena of motor vehicle size and weight legislation. Presented by Rep. Herlong, D., Fla., H.R. 7637 would give motor carriers, shippers, etc., the right to appeal to the ICC for relief in cases where existing size and weight regulations constitute unreasonable obstructions to interstate movement of motor vehicles. ICC would be empowered to impose size and weight regulations which would remove such "obstructions." Admirable in policy, like so many other pieces of legislation, this one does not have the chance of the proverbial snowball during the

present session. Still, it must be pointed out that only by constant pressure for action along these lines will anything ever be done in this or succeeding sessions.

## G.I. Vehicle Replacement Standard

Officials in charge of motor vehicle operations in the various government agencies have under discussion a table of minimum replacement standards for commercial standard trucks varying from 17,000 lb gvw to 28,500 lb gvw. Replacement standards for passenger cars and trucks up to 15,000 lb gvw are already in effect (CCJ, Dec '49, pg 42).

These standards, prepared by the Interdepartmental Motor Equipment Committee of the Budget Bureau, will probably become effective within a matter of weeks. The proposed replacement standards are as follows:

Maximum gvw (pounds)	Total Years	Total or Miles
17,000	7	60,000
20,500	8	65,000
24,500	9	71,000
28,500	10	80,000

Covering the medium class of commercial vehicles, these standards along with those already in effect, will blanket the major portion of the vehicles operated by civilian agencies of the government. The truck standards do not cover construction vehicles, such as dump trucks, which are conceded to be in a special category. Additional standards for heavier commercial standard trucks will probably be promulgated eventually.

## Senate Transport Hearings Underway

The subcommittee on domestic land and water transportation of the Senate Interstate and Foreign Commerce Committee headed by Senator Myers, D., Pa., began its long-awaited series of public hearings on the nation's transportation problems late last month. The subcommittee opened its sessions by hearing testimony from railroad representatives. Motor carriers, water carriers, and pipelines are scheduled to follow in this order.

At the outset of the hearings it was thought that motor carriers would not begin their testimony until some time during the middle of this month. Senator Myers has stated that it is hoped that these hearings, plus the information developed by his staff (CCJ,

(TURN TO PAGE 248, PLEASE)

# Another Crescent Innovation!

## CRESCEENT-WIRY JOE MAROON PLASTIC CABLES

**CRESCEENT LEADS AGAIN!** Now, the famous Crescent-Wiry Joe Maroon Cables are *plastic* to make them even better than ever before!

These advantages of plastic are universally established:

- **PLASTIC** is impervious to oil, water, grease, heat, abrasion, *and is highly resistant to acid.*
- **PLASTIC** is extremely flexible.
- **PLASTIC** *does not support flame.*
- **PLASTIC** is modern.

Add these features to the already outstanding list of Crescent-Wiry Joe Maroon Cable features and you have the *new* CRESCEENT-WIRY JOE

### MAROON PLASTIC CABLES!



WHEN NEXT IN OUR NEIGHBORHOOD, DROP IN—SEE HOW CRESCEENT-WIRY JOE AUTOMOTIVE CABLE IS MADE FROM COPPER TO FINISHED PRODUCT IN ONE PLANT UNDER ONE ROOF

The president of Fleety Fleet Motor Express and his Safety Director hurriedly drove down to a small mountain town in Tennessee, where one of their drivers had been jailed on a serious charge as a result of a highway accident.

Pausing at the ramshackle courthouse in an effort to retain legal help, the Safety Director approached a white-bearded old codger who sat drowsing on the steps.

"Do you have a criminal lawyer here?" he asked.

"We think so, young feller," the old-timer said as he squinted upward, "but we ain't proved it on him."

CCJ

*Slim 'n Greasey, our elongated shop roustabout, says: "A bachelor is a man who possesses the ability to have a girl on his lap without having her on his hands."*

CCJ

Steno Lou: "Why haven't you been wearing those gorgeous lacy underthings that you got for Christmas?"

Steno Sue: "Oh, I've been saving them for the windy days of March!"

CCJ

IN GOLF, IT'S DISTANCE.  
IN A CIGARETTE, IT'S TASTE.  
IN A CROSLEY—IT'S IMPOSSIBLE.

CCJ

Catty Cora, our cute office cut-up, used to like a cocktail now and then. The other day, though, she told us she was forced to give up drinking because she was afraid it might turn into *would* alcohol.

CCJ

*Weavin' Willie, our City Driver, was attending a house party. As he stood in a corner, a large woman with a plate of small cakes bore down upon him. "I'm your hostess," proclaimed the lady. "Could I interest you in a hot cookie?"*

"No thanks," said Willie, "I brought my date along."

CCJ

The ex-G. I. had just been married a year and he was having a rough time making ends meet on the compensation he received as a Maintenance Trainee. His young wife, a clothes-conscious blonde beauty, had never learned the value of a dollar. She would go out and buy a new hat, coat or dress at the slightest provoca-

tion. Finally, her long-suffering husband blew his top.

"Barbara," he moaned, "you promised you wouldn't buy another new dress until you consulted me. What made you do it?"

"Dear," replied his little wifey, "the devil tempted me."

"Why didn't you say: 'Get thee behind me, Satan?'" the harassed hubby inquired.

"I did," his extravagant bride replied sweetly, "and then he whispered over my shoulder: 'My dear, it fits you just beautifully in the back.'"

CCJ

**GREASE MONKEY: "WHAT'S GOOD FOR MY WIFE'S FALLEN ARCHES?"**

**SHOE MERCHANT: "RUBBER HEELS."**

**GREASE MONKEY: "WITH WHAT?"**

CCJ

Steno Lou: "How did you like that big, handsome Truck Dispatcher I got you a date with last night?"

Steno Sue: "He did all right in the pinch, but he would be a bigger success if he had more horsepower and less exhaust."

*Safety Sadie, our studious statistics gal, says she overheard this conversation the other day:*

*"Are the hot wires ready?" came the stentorian voice.*

*"Yes, Master, red hot!"*

*"Is the oil boiling?"*

*"Yes, Master, searing hot!"*

*"Is the victim tied securely?"*

*"Yes, Master, she can not move."*

*"Is the shroud over her?"*

*"Yes, Master, everything is in readiness."*

*"Okay, then give her the two dollar permanent!"*

CCJ

The long distance van driver was laid up with a bad case of influenza. The student nurse who had been caring for him was not very bright. One day, when the doctor came for his regular examination of the sick truckie, he asked, "Nurse, what was this man's temperature at the onset?"

"Gee, I don't know," replied the nurse looking confused. "I've been taking it by the mouth."

CCJ

**THE TRUCK DRIVER IS SAFER WHEN THE ROADS ARE DRY;  
THE ROADS ARE SAFER WHEN THE TRUCK DRIVER IS DRY.**

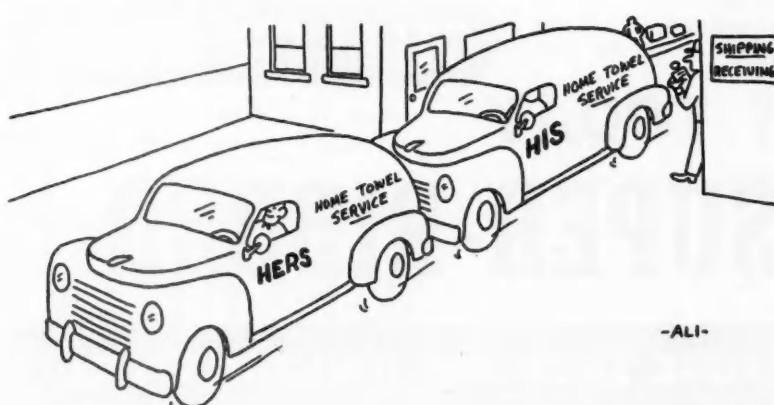
CCJ

*The Safety Director was escorting his little five year old son through the Zoo. Finally, he and little Johnny stood before the cage of the spotted leopard staring intently. Sizing up the situation very carefully, Johnny turned to his father and asked: "Say, pop, is that the dotted lion that everybody wants you to sign on?"*

**RESUME WORK**



## LAUGH IT OFF



**FLEET OPERATORS CALL IT...**

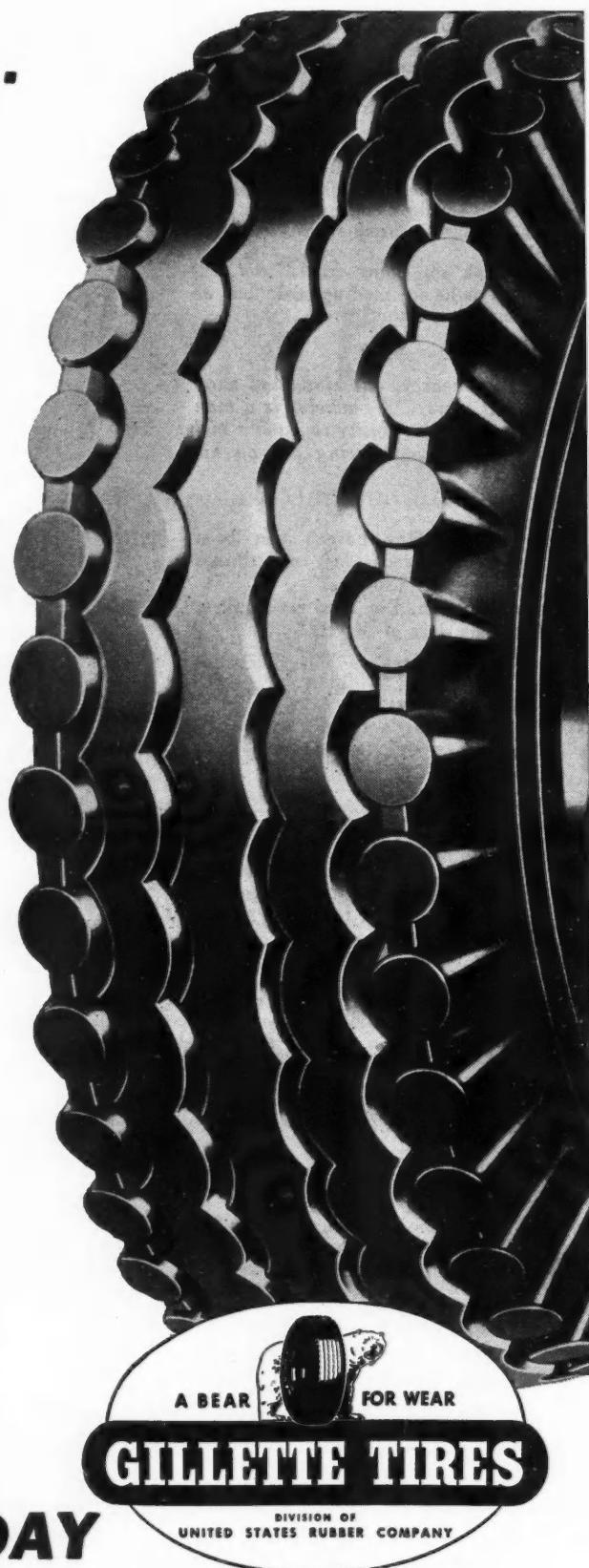
# **WORK HORSE**

## **IN PERFORMANCE...**

Fleet Operators tell us the GILLETTE Super-Ribbed is the hardest-working, longest-wearing highway truck tire they have ever used. They mention particularly its ability to stand up to the toughest, hottest runs without failure or fatigue — its ability to withstand groove-cracking and cut growth — and the high percentage of GILLETTE Super-Ribbed recaps. It's the one right combination of performance and mileage.

## **IN DESIGN...**

GILLETTE Super-Ribbed performance is no accident! It was designed and manufactured for Super Highway Performance! GILLETTE's exclusive, connected-button design on each shoulder reduces heat in the critical area. Super-Ribbed runs cooler, safer, with fewer failures and gives more recaps. The curved grooves between the tread ribs minimize groove-cracking and cut growth. Special GILLETTE design features, plus the all-rayon construction and highest standards of craftsmanship, add up to your biggest value in truck tires.



**GET THEM TODAY  
GILLETTE SUPER-RIBBED**

**WEAR BETTER BECAUSE THEY ARE BUILT BETTER!**

**For the jobs requiring  
Power - plus - Traction  
— you need**

**WALTER FOUR-POINT  
POSITIVE DRIVE**



ON or off the highway—on snow, ice, mud, sand, soft dirt, steep grades—Walter Snow Fighters and Tractor Trucks keep going fast and unfailingly. They are the only trucks with the famous 4-Point Positive Drive which provides 100% positive traction in all four driving wheels. Patented torque proportioning differentials automatically concentrate most power on the wheels having most traction at all times. All the horsepower is converted into haulpower—none is wasted on spinning wheels, as in conventional drives.

Set-back front axle gives balanced weight distribution, short wheelbase, easy maneuvering. Other features include suspended double reduction drive, tractor type transmission, power hydraulic steer, air brakes, rugged construction throughout.

See your Walter dealer—or write for literature.

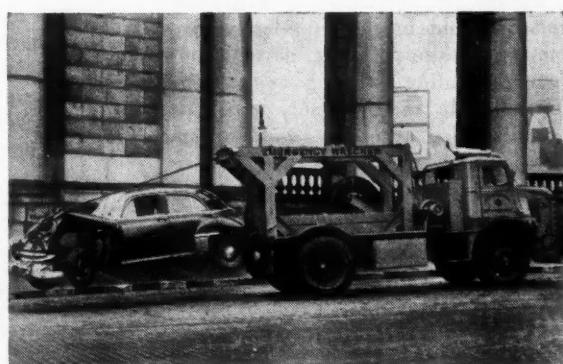
**WALTER  
TRACTOR TRUCKS**



**WALTER SNOW FIGHTERS** clear at higher speeds, remove more snow, open deepest drifts because of their non-slip pushing power on snow and ice. Model shown does four jobs—plows at high speed, widens and levels banks, scrapes hard-packed snow and ice, automatically spreads sand and chemicals. Many other models, up to 250 hp., with plow and wing equipment to meet every need.



**PUBLIC UTILITIES** find the unfailing traction and compact design of Walter Tractor Trucks indispensable for earth boring, cable reel hauling and maintenance equipment. On or off the highway, in all kinds of weather, these Walter units can be depended upon to get to location. Wide choice of engine power and chassis lengths to meet any requirements of load or body style.



**12-TON WRECKER** shown, demonstrates the amazing stability of Walter balanced weight construction. The wrecked car, completely suspended, was hauled several miles through crowded traffic, without weaving. Twice the load could have been handled. This tremendous capacity, plus the 100% traction for all-weather emergency conditions, make the Walter the ideal truck for wrecker service.

**WALTER MOTOR TRUCK CO.**

1001-19 Irving Ave.  
Ridgewood 27, Queens, L. I., N. Y.

# free PUBLICATIONS

A selected list of the latest literature —  
catalogs, pamphlets, charts—chosen to help  
fleetmen improve operation and maintenance.

**FOR CONVENIENCE • USE THIS POST CARD**

### L18. Truck Refinishing

This 30-page, illustrated publication on truck and auto refinishing is the result of practical experience and surveys made by a leading manufacturer in this field. Valuable information is offered for better planning and operation of the paint shop. The manual features such pointers as shop designing, equipping, operation intructions, cost controls, management, etc.

Instructions include such subjects as removing old finishes, preparing bare metals, masking, priming, puttying, surfacing, sanding, striping and chrome finishing. In addition such procedures are discussed as engine, radiator and tire painting. Special instructions cover the technique of spray gun sign painting, and photographs show proper handling methods for the gun.

Of special interest to fleetmen will be the section on Shop Tips, a full page devoted to practical service instructions designed to produce a better refinishing job.

This manual is published expressly to aid the shop in producing quality work at highest efficiency. It is well worth considerable time and study. Available free for the writing of L 18 on the accompanying postcard.

### L19. Oil Condition Chart

A unique device which provides a

simple and efficient check of oil and engine condition, is effectively solving an operating problem for fleet owners.

A handy chart on which vehicles are listed, this Lubri-Graf gives visual proof of the operating efficiency of engines—shows which ones are contaminating oil and eating up cartridges too fast. Lined up with each vehicle's number on the chart, 31 indicator spots are provided for daily check of the monthly operation. The dipstick is touched to the proper indicator spot. If oil obscures the color dot, it's time to change the cartridge.

Fleet operators are finding that this simple device, which forearms before trouble develops and points out vehicles due for overhauls, is effecting substantial economies in fleet operation. Write L 19 on the free postcard for a copy.

### L20. Shopman's Library

A miniature "shopmen's library" for the factory or metal-working plant is being offered by the government. Such fields as grinding, milling, spinning, honing, and tapping; soldering, brazing and welding; working with plastics and alloys; plating and finishing; care and maintenance of equipment; are encompassed in a collection of 54 technical bulletins originally prepared for National Defense Department shops.

Papers currently available cover the machining of aluminum alloys, tapered

workpieces, corrosion, dust control, types and uses of cemented carbide cutting tools, lubrication of machine tools, increasing utilization of shapers, and modern applications of the oxyacetylene torch.

Additional titles completing the series of 54 will be printed in accordance with demand. A combined order blank and reservation form is available on request. An "Industrial Notes Circular" may be obtained by writing L 20 on the postcard.

### L21. Light Reading

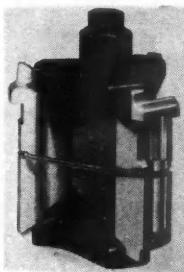
In an illustrated 24-page booklet, "Mountains of the Moon," a noted explorer outlines the story of the preparation for his travels and the establishment of the expedition's eight main camps in British East Africa.

The booklet features eight pages of brilliant full-color photographs. Its text pages are liberally sprinkled with black and white pictures and a sketch map of the long journey. The Kodachrome illustrations, sixteen in number, show native warriors, animals, African landscapes and exotic birdlife. The black and white photographs show similar subjects plus scenes of camp life and procedure. The photographs are chosen from 10,000 taken during the course of the expedition. Free copies may be obtained by writing L 21 on the free postcard.

# NEW PRODUCTS

Illustrating and reviewing newest developments  
in parts, accessories, shop equipment and tools.  
For more information use the attached postcard.

## P98. Ridge Reamer



Model 2100 ridge reamer, range 2 9/16 in. to 4 3/4 in., has a special long-life carbide cutter which will remove the ridge, with just a few turns, from steel sleeved cylinders as well as general automotive cylinders. It has positive three point centering and the operator can check for ridge removal without removing the tool from the cylinder. Ammco Tools, Inc., No. Chicago, Ill.

## 99. Valve Tool

A new valve keeper inserter has been designed especially to replace the small size keepers in the 1949 Ford engines and others which use the new small size keepers.

Made of high tensile aluminum alloy the tool is light enough to support itself on the valve stem, leaving both hands free to work the lifter or compressor. Only 8 3/16 in. long, the tool weighs 2 oz. K-D Mfg. Co., Lancaster, Pa.

## P100. Aro Lubricator

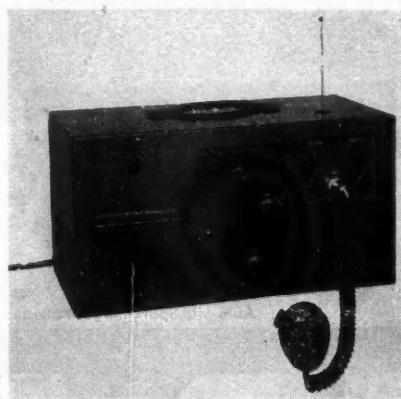
A new Aro "Thrifty-Fifty" portable lubricator has a full size pump to provide fast and thorough grease jobs. It is particularly suited for the fleet owner who requires spare units.

It is powered by a double-acting type pump with 36:1 piston ratio delivering

up to 6000 lb grease pressure. An automatic oiler keeps pump lubricated. Swivel on control handle allows 360 deg. rotation horizontally and vertically. Control nozzle is dual action type, giving operator choice of controlled shot or continuous flow. The Aro Equipment Corp., Bryan, Ohio.

## P101. Radio Station

Carfone Station Unit "15," a portable transmitter-receiver, smaller than an overnight case, is used as headquarters station equipment in mobile communications systems operating in the 152-174-megacycle range. The streamlined unit weighs 44 pounds. It has improved selectivity which eliminates unwanted adjacent channel signals. On the transmitter side, the unit is equipped with a full-signal modulation



control. This circuit transmits the full signal potential of the transmitter and automatically assures excellent modulation.

This unit is housed in a single all-

metal cabinet approximately 20 in. long, 11 in. high, and 9 in. deep, with all controls on the front panel. The panel and the antenna connection are recessed in the housing for protection during transit. For permanent installation, the equipment is placed, and a cable run to the antenna. For portable use, the antenna is plugged into the connector at the top of the cabinet. The transmitter has a power output of 15 watts and operates on 115 volts, 60 cycles, ac. RCA, Camden, N. J.

## P102. Battery Charger



The Thermaster thermostatically-controlled battery charger can fast charge one battery or slow charge one to six batteries. It is equipped with a husky transformer and a dry disc rectifier to provide a 100-amp charging rate. An additional feature is an after fast-charge and after slow-charge battery condition tester.

The thermostat shuts the charger off when the temperature of the battery electrolyte reaches 125 deg, and before the battery can be damaged by excessive heat. It also automatically adjusts the charging period for the size, temperature and state of discharge of the battery. Willard Storage Battery Co., Cleveland, Ohio.

(TURN TO PAGE 222, PLEASE)

# Here's help in



Auto-Lite Spark Plugs—Patented U.S.A.

# AUTO-LITE

# Our Horn Toots Does Yours?

With what might be termed a pardonable dash of pride Commercial Car Journal presents in this fourteenth edition of the Fleet Operators' Reference Annual more than 100 pages of authenticated reference data of value to truck and bus operators throughout the year to come. Among this material, which covers virtually every phase of fleet operation, are more pages of specific maintenance data than have ever before been assembled within the covers of a single magazine.

We'd like to dwell on that maintenance section for just a moment. It begins on this page. Nowhere else in the industry can so much service and maintenance data be found. Aside from its physical size and the extent of its coverage, we also have labored to give it top quality. No effort has been spared to make it accurate and authentic . . . as if it came to you direct from the manufacturers' own engineering and service departments. Just to bring it up to date from last year took a good many personal contacts, hundreds of letters, telegrams, long-distance telephone calls and a whole lot of just plain sweat.

Together with previous issues which cover older models (and which gives us the opportunity to remind you that these April issues are worth saving), it gives you basic service data on virtually every truck and engine now in service. Last year we added data on popular passenger cars used by fleets. This year, the section includes similar information on every current production integral-type American bus.

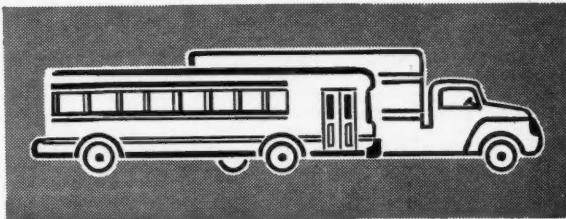
Of course, you will find a great deal of information other than maintenance. You will find pages of basic statistics of the industry beginning on Page 115, and you will find more pages dealing with what we choose to call "Selection and Operation" beginning on Page 121. This includes data on power ratings, transmissions, third-axles, safety requirements, state sizes and weights, diesel fuel, bus and truck specifications, engineering formulas, etc.

So to you, Mr. Fleetman, who actually maintains and operates the vehicles of your fleet—whatever your title may be—this special issue is dedicated. Used to their fullest extent its data will help you to run your fleet efficiently and economically. If by tooting our own horn just a bit we can help make your horns sound off with a resounding blast—then our efforts have been repaid.

-- THE EDITORS

## SECTION I

NINETEEN - FIFTY  
FLEET OPERATORS'  
REFERENCE ANNUAL



## TRUCK and BUS MAINTENANCE

### MAINTENANCE INSTRUCTIONS

Trucks .....	67 to 91
Engines .....	92 to 95
Busses .....	96 to 104
Passenger Cars .....	105

### MAINTENANCE CHARTS

Wear Limits .....	66
Trouble Shooting Guide .....	106
Component Parts Table .....	112

# WEAR LIMITS

## A Practical Guide to Repair and Replacement of Axles, Brakes, Clutches and Engine Parts

### PISTONS, RINGS, CYLINDERS

#### Piston Ring Size

The correct ring size is determined by the smallest cylinder measurement, which will be found by marking below the ring travel. Consult following table to see if ring gaps must be filed to fit odd cylinder sizes.

SMALLEST CYLINDER MEASUREMENT	USE THIS RING SIZE	END CLEARANCE FITTING
Std. to .010	Std.	None
.011 to .019	.020 oversize	File fit
.020 to .024	.020 oversize	None
.025 to .029	.030 oversize	File fit
.030 to .034	.030 oversize	None
.035 to .039	.040 oversize	File fit
.040 to .049	.040 oversize	None
.050 to .059	.060 oversize	File fit
.060 to .069	.060 oversize	None
.070 to .079	.080 oversize	File fit
.080 to .089	.080 oversize	None
.090 to .099	.100 oversize	File fit
.100 to .109	.100 oversize	None

#### Ring Side Clearance

Aluminum Pistons	Cast Iron Pistons
.0015 to .002 top groove	.002 to .0025 top groove
.001 to .0015 lower grooves	.0015 to .002 lower grooves

Ring grooves worn to excessive side clearance should be reconditioned and groove fillers installed. Check pistons for worn grooves and if more than .005 side clearance exists, recut grooves with a Groove-Rite Tool to the next ring width and use a .030 wide groove filler.

#### Piston Ring End Clearance

Diameter of Cylinder	Minimum End Clearance	Maximum End Clearance
0—1 31/32	.005	.013
2—2 31/32	.007	.017
3—3 31/32	.010	.020
4—4 31/32	.013	.025
5—6 31/32	.017	.032
7—8 31/32	.023	.032
9—12	.003 per diametral inch plus .015	

Piston ring end clearance should always be measured at the smallest part of the cylinder bore, usually at the bottom of the cylinder below the ring travel. If ring end clearance is in excess of the maximum, a ring .010 in. larger in diameter should be used and the end clearance adjusted.

(Note: Wilkering recommends reboring and use of next standard oversize when ring end clearance is in excess of the maximum as given above.)

#### Piston Pin Clearance

Pin fits naturally depend upon the accuracy and percentage of bearing surface in the pin hole. The more accurately a pin hole is finished, the looser the pin will feel with the same clearance.

When red bushings are finished on up to date equipment, a slight clearance for an oil film should be allowed. A properly fit pin will almost drop through the rod bushing of its own weight when tried dry, but will have a drag when oiled.

Rod Bushing	HONED	REAMED	DIAMOND BORE
Pins should be fit to the bosses of different type pistons as specified in the following table:	Drop Fit Dry	Light Thumb Fit	Drop Fit Dry
Cast Iron—Bushed	OSCILLATING	FULL FLOATING	SET SCREW
Cast Iron—Not Bushed	Light Thumb Fit Dry	Light Drive Fit	Light Drive Fit
Aluminum	Free Drop	Heavy Palm Fit Dry	Light Drive Fit
	Light Palm Fit Dry		

The following companies have provided information for this section: Aluminum Company of America, Hastings Mfg. Co., Koppers Co., Inc., McQuay-Norris Mfg. Co., Moog Piston Ring Co., Perfect Circle, Ramsey Corp., Sealed Power Corp., Wel-ever Piston Ring Co., Wilkering Mfg. Co.

#### Piston Clearance

Cam "A"—Chevrolet Six cast iron pistons must be cam ground with cam "A". Any cast iron piston in the automotive range can be cam ground with cam "A" at the option of the user. Use the following clearances when finishing either round or with cam "A":

Cyl. diam.	3	3 1/4	3 1/2	3 3/4	4
All lands	.012	.013	.014	.015	.016
Skirt	.003	.00325	.0035	.004	.0045
Cyl. diam.	4 1/4	4 1/2	4 3/4	5	
All lands	.014	.018	.019	.021	
Skirt	.00475	.00525	.00575	.00625	

Cam "B"—Ford "A" and "VB" pistons, and all pistons of the all-aluminum type having a split skirt completely open from top to bottom, use cam "B". Use the following clearances when grinding round. Skirt clearance should be cut in half when using cam "B":

Cyl. diam.	3	3 1/4	3 1/2	3 3/4	4
All lands	.020	.021	.023	.025	.027
Skirt	.00225	.0025	.00275	.00325	.0035
Cyl. diam.	4 1/4	4 1/2	4 3/4	5	
All lands	.030	.033	.036	.039	
Skirt	.00375	.004	.00425	.0045	

Cam "C"—Must be used on all T-slot or U-slot flexible skirt all-aluminum pistons, having a solid section at bottom of skirt, from 2 3/4 to 3 7/16 in. diameter.

Cam "D"—Must be used on all T-slot or U-slot flexible skirt all-aluminum pistons, having a solid section at bottom of skirt, from 3 1/2 to 4 15/16 in. diameter.

Use the following clearances with both cam "C" and "D":

Cyl. diam.	3 1/4	3 1/2	3 3/4	4
All lands	.021	.023	.025	.027
Skirt	.00175	.002	.00225	.0025
Cyl. diam.	4 1/4	4 1/2	4 3/4	
All lands	.030	.033	.036	
Skirt	.00275	.003	.00325	

Cam "E"—Must be used on Nelson Autothermic pistons. Same shape as cam "B" but with .013 in. drop at pin which is necessary because of the solid skirt. Also use "E" on all U-slot pistons.

#### Piston to Cylinder Fit

If the piston skirt diameter is such that the clearance between it and the smallest diameter of the cylinder is 1 1/2 times as much as the clearance recommended by the manufacturer, the pistons should be resized. Pistons should always be resized before piston pin holes are reamed for replacement pins.

#### Cylinder Wear

TYPE SET	MAXIMUM TAPER	MAXIMUM OUT OF ROUNDNESS
Plain	.003	.001
Expander (cast iron)	.006	.002
Expander (steel oil)	.012	.004

(McQuay-Norris recommends plain ring sets only in thoroughly rebuilt truck engines, cast iron expander sets for rebore. Use of cast iron or steel expander sets will be determined by the reputation of the engine for oil consumption or by type of service.)

Where the cylinder taper does not exceed .005 in., the so-called rering job will generally give satisfactory results with conventional compression and oil rings.

Where the cylinder taper is in excess of .005 in.—and if it does not exceed .010 in.—and it is impractical to recondition the engine, a rering job will generally give satisfactory results with spring type rings.

(Note: McQuay-Norris expander sets in cast iron for rebore jobs and steel for rering jobs can be used in up to .012 cylinder taper.)

Any cylinder that is worn or tapered .015 in. or more should be rebored even though the rings are designed to operate in much greater tapers. Maximum out-of-roundness permissible is .005 in. If the cylinder has holes or pockets or waves which are more than .001 in. deep, or a ridge at the bottom of the ring travel area, the cylinder should be rebored.

#### Cylinder Finish

Recommended cylinder finish in all rebore, rering and resleeve installations is 10-25 microinches RMS. with a cross hatch pattern of scratches. In rebore and resleeve installations the use of a 200-250 grit hone stone is recommended. Hone must be allowed to cut-self free with no pressure upon removal. In a rering installation the recommended finish can be obtained by using a Deglazer with 3/0 emery cloth. Clean cylinders with brush, hot water and soap.

(Note: McQuay-Norris recommends use of a 280 grit hone to deglaze and also to following boring bar.)

#### Main and Connecting Rods

The following companies have provided information for this section: Federal Mogul, Monmouth Products division of Cleveland Graphite Bronze Co.

#### Bearing Tolerances

CRANKSHAFT—A shaft worn to the extent that the bearing surfaces are ridged and scored, is unfit for use and must be reground.

JOURNALS: Should not be more than .003 in. (a) out-of-round.

CRANKPINS: Should not be more than .002 in. out-of-round. If main journals or crankpins exceed these tolerances, the shaft is unfit for further use and must be reground.

CRANKCASE—Bearing Saddle Bores: Must be round within .002 in. (b) and in true alignment lengthwise for use with precision insert main bearings. Maximum out-of-round journals should not be used with maximum out-of-round case bores.

MAIN BEARINGS—Spread (width across the open ends) should exceed the crankcase bore diameter by .005 in. to .020 in., depending on the thickness and structural stiffness of the bearing.

(TURN TO PAGE 214, PLEASE)

## CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
C45, C45T, U45, U45T (1948-50)	10	14	25	27
C50, C50T, U50, U50T (1945-50)	10	14	20	27
C50D (1946-50)	10	14	20	27
C5064 (1946-50)	10	14	12ea	27
C70, C70T (1945-50)	12	18	20	34
U70, U70T (1945-50)	12	18	20	38
C70S, C70TS (1945-50)	12	18	18	33
U70S, U70TS (1945-50)	12	18	18	38
C70D (1946-50)	12	18	18	34
C70DS (1946-50)	12	18*	18	33
C7064 (1946-50)	12	18	12ea	34
C75T (1948-50)	14	18	18	42
C8044 (1948-50)	12	18	18	33
C90 (1945-50)	12	18*	18	33
C90T (1945-50)	12	18	18	33
U90, U90T (1945-50)	12	18	18	38
C90D (1946-50)	12	18	18	33
C9064 (1946-50)	12	18	20ea	33
C95T (1948-50)	14	24	18	42
DC100, DC100T, DC100D (1945-50)	20	14	18	37
DC100N, DC100TN, DC100DN (1946-50)	28	18*	18	40
DC10044N (1948-50)	28	16	18	40
DC10064 (1945-50)	20	18*	17ea	40
DC10064N (1946-50)	28	16*	17ea	40
DC10064S (1945-50)	20	18*	26ea	40
DC10064SN (1946-50)	28	18*	26ea	40

## MAINTENANCE DATA

# AUTOCAR



## 45, 50, 70, 70S, 75, 8044, 90, 95, DC75, DC100 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## BATTERY

### MODEL

	Am. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models (1945-50)	120*	17	Pos
All Diesel Models (1945-50)	155**	23	Pos

\*—Auxiliary Transmission 12 pints.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs °TC Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Crank Speed	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
45 Series (1948-50), 50 Series (1945-50)	Own 377	6-4x5	40-2450	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	100
70 Series (1945-46)	Own 447	6-4½x5½	40-2400	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	95
70 Series (Note A), (1946-50)	Own 447	6-4½x5½	40-2400	16°B	6B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	105
70S Series (1945-46)	Own 501	6-4½x5½	40-2400	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	95
70S Series (Note B), (1946-50)	Own 501	6-4½x5½	40-2400	16°B	6B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	105
75 Series (1948-50)	Con R6572	6-4½x5½	60-1800	17°B	4B	.....	.020	.020	CH	5 COM	18mm	.025	C	5°B	120	
90 Series (1945-46)	Own 501	6-4½x5½	40-2400	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	95
8044 Series, 90 Series (Note B), (1946-50)	Own 501	6-4½x5½	40-2400	16°B	6B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	2B	105
95 Series (1948-50)	Con R6602	6-4½x5½	60-1800	17°B	4B	.....	.020	.020	CH	5 COM	18mm	.025	C	5°B	120	
DC75 Series (1949-50)	Cum HB600	6-4½x6	40-1800	5°B	.....	.....	.014	.022	Di	esel	.....	.....		.....	.....	525
DC100 Series (1945-50)	Cum HB600	6-4½x6	40-1800	5°B	.....	.....	.014	.022	Di	esel	.....	.....		.....	.....	525
DC100N Series (1946-50)	Cum NHB600	6-5½x6	40-2100	.....	.....	.....	.017	.027	Di	esel	.....	.....		.....	.....	500

Note A—Beginning with Engine No. 45-4541.

Note B—Beginning with Engine No. 60-5561.

C—.018-.024.

## VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
377 (1948-50)	110	2½	76	2½
447, 501 (1945-46)	110	2½	76	2½
*447, *501 (1946-50)	132	2½	69	2½
Con R6572, R6602 (1948-50)	170	1½	73	2½
Cum HB600 (1945-50)	136	3½↑	87	3½↑
Cum NHB600 (1945-50)	102	3½↑	72	3½↑

\*—Beginning with 447 Engine No. 45-4541 and 501 Engine No. 60-5561.

↑—Free length.

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
C45 (1948-50); C50, C70, C70S, C90 (1945-50)	0-1/4	1	N1-1P	.....
C45T, C75T, C95T (1948-50)	0-1/4	1	N1-2½P	.....
C50D, C5064, C70D, C70DS, C90D (1946-50)	0-1/4	1	N1-1P	.....
C7064, C7070, C70TS, C90T (1945-49)	0-1/4	1	0-2P	.....
U45, U45T (1948-50); U50, U50T, U70, U70T, U70S, U90 (1945-50)	0-1/4	1	N1½-1P	8
C8044, DC10044N (1948-50)	0-1/8	0	5P	0
DC75T (1949-50); DC100, DC100T (1945-50)	0-1/4	1	0-2P	.....
DC100D, DC10064S (1945-50); DC100TN, DC10064N, DC10064SN (1946-49)	0-1/4	1	N1-1P	.....
DC10064SN (1950)	0-1/4	1	0-2P	8
	0-1/4	1	N1-1P	8

N—Negative. P—Positive.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (1945-50)	(S)30	(M)20	(W)10	140	90	140	90	140	90	140-90
S—Summer. M—Mild. W—Winter.										

# BROCKWAY



## Models 88WH, 128W, 146W, 148W, 151W, 152W, 153W, 154W, 154WH, 240XW, 260XL, 260XW, 260XWL

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	Intake	Exhaust	SPARK PLUG			
				°TC	Flywheel Teeth TC				Make	Type	Size	Gap
88WH (1945-50)	Con 38B	6-3½x4½	40-2000	6½*B	2½B	.022	.017C	.022C	CH	7 COM	18mm	.025
128W, 146W (1947-50)	Con 40B	6-4x4½	40-2000	6½*B	2½B	.022	.017C	.022C	CH	7 COM	18mm	.025
148W, 151W, 152W, 153W, 154W (1944-50)	Con 42BX	6-4½x4½	55-2500	16½B	6B	.022	.017C	.022C	CH	7 COM	18mm	.025
154WH, 240XW, 260XL (1947-50)	Con 46B	6-4½x5½	55-2500	17*B	6½B	.024	.022C	.022C	CH	5 COM	18mm	.025
260XWL (1947-50)	Con 48B	6-4½x5½	55-2500	17*B	6½B	.024	.022C	.022C	CH	5 COM	18mm	.025

C—Cold.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
88WH, 128W, 146W (1944-50)	110-118	1.52	53-59	1½
148W, 151W, 152W, 153W, 154W (1944-50)	O. 110-118 I. 28-32	1.52 1.44	53-59 11.3-14.3	1½ 1½
154WH, 240XW, 260XW, 260XL, 260XWL (1944-50)	O. 160-170 I. 82-88	1½ 1½	67-73 33-37	2½ 2½

O—Outer. I—Inner.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
88WH, 128W, 146W, 148W, 151W, 152W, 153W, 154W (1944-50)	40 above 32°	30 below 32°		90EP	90EP	90EP	90EP	160	110	140
154WH, 240XW, 260XW, 260XL, 260XWL (1944-50)	30 above 32°	30 below 32°		90EP	90EP	90EP	90EP	160	110	140

EP—Extreme pressure lube.

## CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
88WH (1945-50)	7	7	15	25
128W (1947-50)	7	12	31	25
146W (1947-50)	7a	16	31	30
148W (1948-50)	8a	16	34	32
151W (1948-50)	8a	16	31c	32
152W (1947-50)	8a	16	36	32
153W (1948-50)	8a	16	31c	30
154W (1947-50)	8a	16	31c	30
154WH (1947-50)	14b	18	30c	40
240XW (1947-50)	14b	18	30c	40
260XW, 260XL, 260XWL (1947-50)	14b	18	34d	40

a—When oil filter is drained add 1 extra qt.

b—When oil filter is drained add 4 extra qts.

c—With 2-speed axle—18 pt.

d—With 2-speed axle—32 pt.

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
88WH, 128W, 146W, 148W, 151W, 152W, 153W, 154W, 240XW, 260XL, 260XWL (1947-50)	120	17	Pos
152W, 153W, 154W, 240XW, 260XL (1947-50)	155	23	Pos
260XW, 260XWL (1947-50)	120*	17	Pos

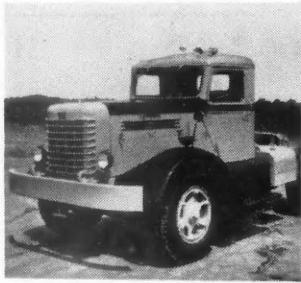
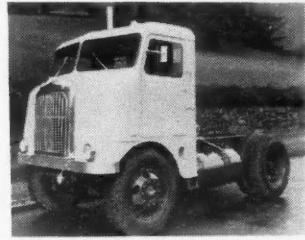
\*—2 Batteries.

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models . . . . .			See Continental—Page 92

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
88WH, 128W, 260XL, 260XWL	16-18	1	1-2	8
146W, 148W, 154W, 154WH	16-18	1	1-2	8
151W, 152W, 153W, 240XW, 260XW	16-18	1	1-2	0

**BROWN****Models Gas and Diesel****MAINTENANCE DATA****FREIGHTLINER****Models  
A-64, B-42**

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

**CAPACITIES**

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Trans- mision Pints	Rear Axle Pints	Cooling System Capacity, Quarts	
BROWN 22RT	12*	24	20	46	
R6513T, R6572TC-TJ	16*	24	20	46	
140GKT		24	20	46	
HB600TH-TJ	20*	24	20	46	
HRB600TJ, HRBB600TJ	30*	24	20	46	
NHB600T	30*	29	20	52	
FREIGHTLINER A-64, B-42	28	17†	20	58	

\*—Change.  
†—17 Main and 17 Aux.

**BATTERY**

MODEL	BROWN				FREIGHTLINER	A-64, B-42	Main	Connecting Rod Bearings (pounds-foot)
	Amp. Capacity	Number of Plates	Terminal Grounded					
22RT, R6513T, R6572TC-TJ	100a*	13	Pos					
140GKT, R6572TJ	140a*	13	Pos					
HB600TH	100a**	13	Pos					
All other Diesels	140a**	13	Pos					
					200a	25		
					**—One 12 volt battery.	**—Two 12 volt batteries.		
					†—Alternate battery.	a—Discharge at 20 hours.		

**TUNE UP**

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs Fly-Wheel Teeth °C	A-Before	A-After	Fly-Wheel Teeth °C	A-Before	A-After	Conn. Pressure at Cranking Speed	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size								
BROWN 22RT	Con 22R	6-4½x5½	30-1800	4° A		.014	.016	.016	AL	BT4	18mm	.024	.036	2° B				110	
R6513T	Con 6513	6-4½x5½	60-1800	15° A		.020	.020	.020	CH	6COM	18mm	.030	.030	3° B				110	
R6572T	Con 6572	6-4½x5½	60-1800	15° A		.020	.020	.020	AL	BT8	18mm	.030	.030	3° B				110	
140GKT	Wau 140GK	6-4½x5½	40-1800	5° B		.014	.022												
HB600T	Cum HB600	6-4½x6	40-2000																
HRB600T	Cum HRB600	6-5½x6	40-1800																
HRB600T	Cum HRB600	6-5½x6	40-2100																
NHB600T	Cum NHB600	6-5½x6	40-2100																
FREIGHTLINER A-64	Cum NHB	6-5½x6	35-50*	20° B		.014	.027												525
B-42	Cum HRB	6-5½x6	35-50*	5° B		.014	.022												525

\*—At operating speed.

**VALVE SPRINGS**

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
BROWN All 22R			57	2½
Con 6513, 6572	170	1¾	73	2½
Cum HB600, HRB600, HRBB600	136	3½*	87	3½*
Cum NHB600	102	3½	72	3½*
FREIGHTLINER Cum NHB	109	1½	78	2½
HRB	136	2½	87	2½

\*—Free length.

**FRONT END**

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
BROWN All Models through TH All TJ Models (1949)	1/8 ± 1/8	3/8 ± 1/4	4°-5° P	8
FREIGHTLINER All Models P—Positive	1/4	1	2½	8

**LUBRICATION**

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
BROWN 22RT, R6513T R6572T All Diesel Models	(S)—40	(W)—30		140	90	140	90	140	90	#0
	(S)—40	(W)—30		50*	50*	140	90	140	90	#0
	(S)—20	(W)—20		50*	50*	90	90	140	90	#0
FREIGHTLINER A-64, B-42	(S)—30	(W)—30		90	90	90	90	90	90	90
S—Summer.	W—Winter.		*—Spicer transmissions. With Fuller transmissions: Summer—140; Winter—90.							

# CHEVROLET



**HP, HR, HT, HS, HU, TJ, TK, TL, TP, TPS,  
TR, TRS, TS, TSS, TV, TVS, TW, TWS, TX**

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap					
All Models with 216.5 cu. in. Engine.....	Own	6-3 <sup>1</sup> / <sub>2</sub> x3 <sup>3</sup> / <sub>4</sub>	14-2000	1°A	1 <sup>1</sup> / <sub>2</sub> B	EXH	.008*	.015*	AC	44-5Com	14mm	.035	.018	5°B	...	110	110
All Models with 23.5 cu. in. Engine.....	Own	6-3 <sup>1</sup> / <sub>2</sub> x3 <sup>3</sup> / <sub>4</sub>	14-2000	1°A	1 <sup>1</sup> / <sub>2</sub> B	Zero	.008*	.015*	AC	44-5Com	14mm	.035	.018	5°B	...	110	110

\*—Above 8000 lb GVW, except school buses, .010 intake, .020 exhaust.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models.....	124-140	1.505	53-63	1.821

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models.....	20 above 32°	20W@10° to 32°	10W@-10° to 10°*	90	90	90MP	90MP	MP	MP	90

\*—10% kerosene below—10°.

MP—"Multi-Purpose" Gear Lubricant.

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
HP (1 <sup>1</sup> / <sub>2</sub> -Ton).....	5	1 <sup>1</sup> / <sub>2</sub> *	4 <sup>1</sup> / <sub>2</sub>	15
HR, HT (3 <sup>1</sup> / <sub>2</sub> -Ton).....	5	1 <sup>1</sup> / <sub>2</sub>	6	15
HS, HU (1-Ton).....	5	6	6	15
TJ, TK, TL (1 <sup>1</sup> / <sub>2</sub> -Ton).....	5	6	11	15**
TV, TVS, TW, TWS, TX, TP, TPS, TR, TRS, TS, TSS.....	5	8	12***	17 <sup>1</sup> / <sub>2</sub>

\*—With optional 4-speed transmission, 6 pt.

\*\*—With optional 3-in. core, 17<sup>1</sup>/<sub>2</sub> qt.

\*\*\*—With optional 2-speed rear axles, 14<sup>1</sup>/<sub>2</sub> pt.

## BATTERY

MODEL	BATTERY		
	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
TL, TX (School Bus).....	125	19	Neg
All Trucks.....	100	15	Neg

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)	SPARK PLUG		Intake	Exhaust	Make	Type	Size	Gap
				Intake	Exhaust						
All Models.....	70-80	100-110*	40-50*								

\*—With oiled threads.

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)	
				HP (1 <sup>1</sup> / <sub>2</sub> -Ton).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>
HR (3 <sup>1</sup> / <sub>2</sub> -Ton).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>	2-3	2-3	HR (3 <sup>1</sup> / <sub>2</sub> -Ton).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>
HT (3 <sup>1</sup> / <sub>2</sub> -Ton Forward Control).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> -3 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> -3 <sup>1</sup> / <sub>2</sub>	HT (3 <sup>1</sup> / <sub>2</sub> -Ton Forward Control).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>
HU (1-Ton Forward Control).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> -3 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> -3 <sup>1</sup> / <sub>2</sub>	HU (1-Ton Forward Control).....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>
HS, TJ, TK, TL, TV, TVS, TW, TWS, TX, TP, TPS, TR, TRS, TS, TSS.....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> -3 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub> -3 <sup>1</sup> / <sub>2</sub>	HS, TJ, TK, TL, TV, TVS, TW, TWS, TX, TP, TPS, TR, TRS, TS, TSS.....	1 <sup>1</sup> / <sub>2</sub> -2 <sup>1</sup> / <sub>2</sub>

\*=1 deg.

## CAPACITIES

MODEL	LUBRICANT CAPACITY			Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	
G101	8	12	20	28
G301	8	16	23	30
G302	8	16	31	35
G402	9	16	31	35
G601	18	24	†	47
G602	18	24	†	49
G603	18	24	†	53 <sup>1/2</sup>
D202	9	12	20	26
D401	15	16	23	35
D402	15	16	31	35
D601	13	15	†	40
D801	20	29	†	42
D802, D803, D808	28	29	†	42

\*—Without filter.

†—38 for Model S200, 30 for Model R100.

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
G101, G302, G402	100*	13	Pos
G301	135	19	Pos
G601, G602, G603	135*	19	Pos
D202, D401, D402, D601, D801, D802, D803, D808	200**	25	Pos

\*—2 Batteries.

\*\*—4 Batteries.

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
G101, G301, G302, G402, G601, G602, G603	20-25	1 <sup>1/2</sup> (20)	85-95
	35-40	1 <sup>1/2</sup> (18)	120-130
	70-75	1 <sup>1/2</sup> (18)	135-145
D202	158	77*-95**	140
D401, D402	158	175	158
D601	5 <sup>1/2</sup> -175	175	158
D801, D802, D803, D808	430-450	310-330	105-115

\*—Center and Rear.

\*\*—Front and Intermed.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG			Breaker Point Gap	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap	
G101	Con M6330	6-4x4 <sup>1/2</sup>	40-50-50	6 <sup>1/2</sup> B		.022a	.022ab	AC	84	18mm	.025	.020	6 <sup>1/2</sup> B
G301	Con B6371	6-4 <sup>1/2</sup> x4 <sup>1/2</sup>	40-50-50	6 <sup>1/2</sup> B		.022	.025b	AC	85	18mm	.025	.020	6 <sup>1/2</sup> B
G302	Con B6427	6-4 <sup>1/2</sup> x4 <sup>1/2</sup>	40-50-50	6 <sup>1/2</sup> B		.022	.017	AC	84	18mm	.025	.020	7 <sup>1/2</sup> B
G402	Con T6427	6-4 <sup>1/2</sup> x4 <sup>1/2</sup>	40-60-50	16 <sup>1/2</sup> B		.022	.017	CH	C6	18mm	.025	.020	7 <sup>1/2</sup> B
G601	Con R6513	6-4 <sup>1/2</sup> x5 <sup>1/2</sup>	50-60-60	17 <sup>1/2</sup> B		.0245	.020	AC	85	18mm	.025	.020	5 <sup>1/2</sup> B
G602	Con R6522	6-4 <sup>1/2</sup> x5 <sup>1/2</sup>	50-60-60	17 <sup>1/2</sup> B		.0245	.020	AC	85	18mm	.025	.020	5 <sup>1/2</sup> B
G603	Con R6602	6-4 <sup>1/2</sup> x5 <sup>1/2</sup>	50-60-60	17 <sup>1/2</sup> B		.0245	.020	AC	85	18mm	.025	.020	5 <sup>1/2</sup> B
D202	Her DJXH	6-3 <sup>1/2</sup> x4 <sup>1/2</sup>	45-2000	12 <sup>1/2</sup> B		.010	.010	AC	85	18mm	.025	.020	5 <sup>1/2</sup> B
D401	Her DWXD	6-4 <sup>1/2</sup> x4 <sup>1/2</sup>	50-2600	17 <sup>1/2</sup> B		.010	.010	AC	85	18mm	.025	.020	5 <sup>1/2</sup> B
D402	Her DWXLD	6-4 <sup>1/2</sup> x5											
D601	Her DRXC	6-4 <sup>1/2</sup> x5 <sup>1/2</sup>	30-1200	12 <sup>1/2</sup> B		.016	.016	AC	84	18mm	.025	.020	475
D801	Cum HB600	6-4 <sup>1/2</sup> x6	30-40-1800	5 <sup>1/2</sup> B		.014	.014	AC	85	18mm	.025	.020	525
D802	Cum HRB600	6-5 <sup>1/2</sup> x6	30-40-1800	5 <sup>1/2</sup> B		.014	.014	AC	85	18mm	.025	.020	525
D803	Cum NHB600	6-5 <sup>1/2</sup> x6	30-40-2000	20 <sup>1/2</sup> B		.009	.009	AC	85	18mm	.025	.020	525
D808	Cum HRB600	6-5 <sup>1/2</sup> x6	30-40-2000	5 <sup>1/2</sup> B		.014	.014	AC	85	18mm	.025	.020	525

a—With Roto valves, set @ .018.

b—With Stelite valves, increase .003.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed		Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
	O—Outer	I—Inner	O—Outer	I—Inner				
G101	111-118	1.521	53-59	1 <sup>1/2</sup>				
G301, G302	102-110	1.521	53-59	1 <sup>1/2</sup>				
	28-32	1 <sup>1/2</sup>	11.3-14.3	1 <sup>1/2</sup>				
G402	129	1.458	71	1 <sup>1/2</sup>				
	57	1 <sup>1/2</sup>	12.8	1 <sup>1/2</sup>				
G601, G602, G603	160-170	1.75	67-73	2.25				
	82-88	1.75	33-37	2.25				
D202	55	1.406	31	1.781				
	37	1.281	19	1.658				
D401, D402	73	1 <sup>1/2</sup>	34	1 <sup>1/2</sup>				
	64	1 <sup>1/2</sup>	25	1 <sup>1/2</sup>				
D601	48	1.449	27	1.844				
	30	1.355	17	1.75				
D801	129-143	2 <sup>1/2</sup>	83-91	3 <sup>1/2</sup>				
D802, D808	129-143	2 <sup>1/2</sup>	83-91	2 <sup>1/2</sup>				
D803	102	1 <sup>1/2</sup>	72	3 <sup>1/2</sup>				

†—Free length.

O—Outer.

I—Inner.

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter	
All Diesels (1947-50)	40 above 90°	30 above 32°	20 below 32°	140	90	140	90	140	140	140	
All Gasoline Models (1947-50)	50 above 90°	40 above 32°	30 below 32°	140	90	140	90	140	140	140	

## MAINTENANCE DATA

# CORBITT



Models G101, G301, G302, G402, G601, G602, G603, D202, D401, D402, D601, D801, D802, D803, D808

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## FRONT END

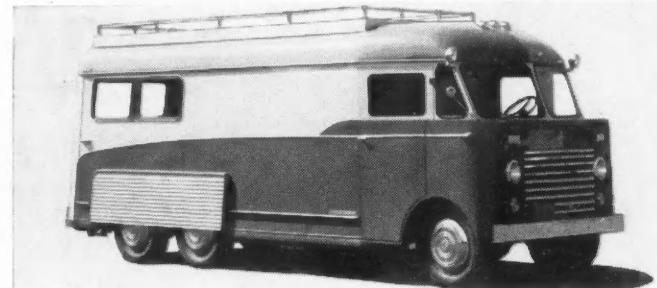
MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All 2-Wheel Drive (1947-50)	1/4-1/4	1	2-3 <sup>1/2</sup>	8
All Front Wheel Drive (1947-50)	0	0	5-7	0

# DART



**Models: 100, 110, 140, 200 Series,  
250 Series**

# LINN



**Models: A-15, A-25, A-35, A-45,  
L-2, L-4, L-6, L-8**

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
DART—100, 110, 200/300, 200/456	120	17	Pos.
140, 250/462, 250/472	168**	17	Pos.
LINN—All Models	135	19	Pos.

\*\*—12 Volt Battery.

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connect- ing Rod Bearings (pounds- feet)
DART 100, 200/3010, 200/456	129-134	129-134	120-125
110	160-170	155-185	
140, 250/472	300	260	263
250/462	175	241-250	72-75
LINN L-2, L-4, L-6, L-8, A-15, A-25, A-35, A-45	52½	Note 1	38½
	75	Note 1	52½

Note 1—Front and Inter.—70; Center and Rear—58½

## CAPACITIES

MODEL	Engine Quarts	Trans- mission Pints	Rear Axle	Cooling System Capacity, Quarts
DART—100	10	24	38	42
110	15	24	39	65
140	28	44	100	59
200/3010	10	16	28	42
200/456	10	32	64	42
250/462	18	29	52	46
250/472	28	29	56	59
LINN—L-2, L-4, L-6, L-8	6	2½	6*	18
A-15, A-25, A-35, A-45	6	2½	6*	22

\*—Front axle only.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG				Breaker Point Gap		
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size		
DART—100, 200/3010, 200/456	Wau 140GK	6-4½x5½	40	5°A	.....	.010	.012-4C	.018-20C	CH	8 COM	18mm	Z	.018
110	Det 6094	6-4½x5	30	.....	.....	.010	.012	.012	Di	Di			
140, 250/472	Her DFXH	6-5¾x6	38	.....	.....	.010	.010	.016	esel	esel			
250/462	Wau 145GK	6-5½x6	40	5°A	.....	.010	.012-4C	.023-25C	CH	8 COM	18mm	Z	.020
LINN—L-2, L-4	Her QXC3	6-3½x4½	26-1600	5°B	.....	.006	.006	.010	AL	A5	14mm	4B	.018
L-6, L-8, A-15, A-25	Her JXE3	6-3½x4½	26-1600	5°B	.....	.006	.008	.010	AL	A5	14mm	4B	.025
A-35, A-45	Her JXC	6-3½x4½	26-1600	5°B	.....	.006	.008	.010	AL	A5	14mm	4B	.018
Det—Detroit Diesel (GM).			Z—.025-.030.	C—Cold									

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
DART—All Models—See Listing under Engine Manufacturers, pages 92-95				
LINN—L-2, L-4 L-6, L-8, A-15, A-25, A-35, A-45	37	1.281	19	1.856
	58	1.594	43	1.920

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLOAN (in degrees)
DART—All Models.	1½-2½	1 ¾	1	2
LINN—All Models.	1½-2½	1 ¾	1	2

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
DART—All Models.	(S & W) 30 40 above 90°	(Extreme Cold) 20 30@32°-90°	20@10°-32°*	90 140	140 90	90 140	140 90	90 140	140 90	B
LINN—All Models.										

\* 10, 10W Below 10°.

S—Summer.

W—Winter.

B—Chassis lube.

## CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
201	6	4½	6	16
222	6	4½	6	19
306	6	4½	8d	17
322	6	4½	8d	19
404	9	4½a	11d	23
404SC	9	4½	8d	26
420	9	4½	11d	24
509	9	4½a	13	23
509C	9	4½a	11d	26
509SC	9	4½a	13d	24
520	9	4½	14d	24
614	9	12	23d	22
614C	9	12	20	23
614SC	9	12	23d	22
620	9	12	22d	24
650T	10	18	22d	35
702A	8	20b	20d	43
703	10	20b	20d	42
704	10	18	30d	42
806A	8	18b	22d	43
806C	10	20	16	28
809	10	18b	22d	43
901	18	15c	30d	54
910	20	44ca	30d	53
910N	50	44ca	30d	44
910R	50	44	30d	50

a—Capacities shown are for standard transmissions. The following, furnished on certain models, are optional.

WARNER	FULLER
T9-T8A—4½ pt.	5A-65—24 pt.
T87—4½ pt.	10B-1120—44 pt.
T98—6 pt.	
CLARK	SPICER
205V-VO—12 pt.	6252-6253—15 pt.
270V-VO—20 pt.	7751-7851—26 pt.
276V—20 pt.	8255—24 pt.
290V-VO—18 pt.	b—Aux. trans.—8 pt.
291V—18 pt.	c—Aux. trans.—12 pt.
326V-VO—24 pt.	

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			
							Intake	Exhaust	Make	Type	Size	Gap
201, 222, 306, 322	Her QXLD	6-3½x4½	25-40-3200	5'B		.006	.008	.010	CH	J-6	14mm	.027
404SC	Her JXE-3	6-3½x4½	25-40	5'B		.010	.008	.010	CH	J-6	14mm	.027
404, 420, 509	Her JXB	6-3½x4½	25-40-3000	5'B		.010	.008	.010	CH	J-6	14mm	.027
420, 509, 509C, 509SC, 520, 620	Her JXC	6-3½x4½	25-40-3000	5'B		.010	.008	.010	CH	J-6	14mm	.027
614, 614SC, 614C, 614SC, 520, 620	Her JXD	6-4x4½	25-40-3000	5'B		.010	.008	.010	CH	J-6	14mm	.027
702A, 806A	Her JXL	6-4x4½	25-40-3000	5'B		.010	.010	.010	CH	J-6	14mm	.027
650, 650T, 703, 809	Her WXLD	6-4½x4½	25-40	5'B		.010	.012	.016	CH	J-6	14mm	.027
704	Con T6427	6-4½x4½	35-43-2600	16'B		.022	.017	.022	CH	8 COM	18mm	.025
806C	Her TDXB	6-4½x5½	25-30	5'B		.010	.010	.016	AL	AT-8	14mm	.027
901	Her WXLC-3	6-4½x5½	25-40	5'B		.010	.012	.016	CH	J-6	14mm	.027
910N	Con R6572	6-4½x5½	50-55	17'B		.024	.020	.024	CH	5 COM	18mm	.025
910R	Cum HB-600	6-4½x6					.014	.022				Diesel
	Cum NHB-600	6-5½x6	55-2100									Diesel
	Cum HRB-600	6-5½x6	55-1800									Diesel

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Her QX-3, QXLD	48 lb. for 1 in. defl.			2½-2½†
Her JXE-3, JXB, JXC, JXD	60-65 at 1.594 length			2½†
Her JXL	112 at 1.628 length*			
Her WXLC, WXLD	O. 97-107 at 2½ length			3½†
Her TDXB	I. 47½-52½ at 2½ length			3½†
Con T6427	O. 97-107 at 2½ length			2½†
Con R6572	I. 53-59 at 1½ length			2½†
Cum HB600, HR600	O. 11½-14½ at 1½ length			2½†
	I. 67-73 at 2½ length			2½†
	I. 32-38 at 2½ length			2½†
	129-143 2		83-91	2½†

†—Free Length. —Inner. —Outer.  
\*—Data shown with 4 active coils; with 5 active coils; 58.6 lb. at 1.984 in. length.

## LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	
201, 306, 404, 404SC, 509, 509SC, 614, 614C, 702A, 703, 806A, 806C, 809	40	30							
901	40	30							
222, 322, 420, 520, 620, 614SC, 650T	40	30							
704, 910, 910N, 910R	40	30							

Note—Heavy-duty detergent (HD) engine oil recommended for heavily worked and highway trucks; premium-type engine oil for city trucks and intermittent operation.

A—Clark spiral bevel axles, 140EP; hypoid 90HYP. Eaton 2-speed, 90EP, 140EP above 100°; hypoid 90MPGL. Timken spiral bevel axles 140GO; hypoid 140MPGL; worm drive 140GO.

## MAINTENANCE DATA

# DIAMOND T

d—Capacities shown are for standard axles. The following optional axles are furnished on certain models.

CLARK	18601—22 pt.	U-200P—38 pt.
R-950—9 pt.	20500—22 pt.	U-300—39 pt.
R-1000—11 pt.	22501—32 pt.	S-200P—38 pt.
R-1250—14 pt.		SW-3012—17 pt.
EATON	L-100—23 pt.	SD-3010—14 pt.
1350—13 pt.	L-200—31 pt.	SW-3010—14 pt.
13600—13 pt.	L-300—29 pt.	SD-462W—20 pt.
16500—17 pt.	Q-200—34 pt.	SW-456W—20 pt.
16600—20 pt.	Q-300—32 pt.	SBD1055—19 pt.
18500—20 pt.	R-100—30 pt.	SBD1555—22 pt.
18501—20 pt.	R-200—36 pt.	SFD460—26 pt.
18600—22 pt.	R-300—34 pt.	



## TENSIONS

See pages 92, 93

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
201, 306, 404SC, 222, 322	100	a	Pos
404, 509, 509SC, 614, 614SC, 620, 650T, 702A, 703, 809	150	d	Pos
420, 520	120	e	Pos
509C, 614C	160	b	Pos
704, 806A, 809, 901, 910, 910N, 910R	168	c	Pos

a—SAE No. M. b—SAE No. 7B c—SAE No. 2H. d—SAE No. 5H. e—SAE No. 4H.

## All Current Models

If optional engine used, see page 92 to 95.

## FRONT END

MODEL	TOE-IN (In Inches)	CAMBER (In Degrees)	CASTER (In Degrees)	K. P. SLANT (In Degrees)
201, 306			1	3½
222, 322			1	3
404, 404SC, 509, 509SC, 420, 520			1	11½
509C, 614, 614C, 614SC, 620			1	11½
702A, 703, 704, 806A, 809			1	2½
806C, 901			1	11½
650T			1	2½
910, 910N, 910R			3	8½

B—Clark spiral bevel axles 90EP; hypoid 90HYP. Eaton 2-speed 90EP; hypoid 90MPGL.

Timken spiral bevel 140GO; hypoid 140MPGL; worm drive 140GO.

C—With Spicer transmission 50MO summer and winter.

MPGL—Multi-purpose gear lubricant. GO—Straight mineral gear oil. MO—Motor oil. EP—Extreme pressure lube. HYP—Heavy-duty hypoid tube.

# DODGE



## Series B-2-B, B-2-C, B-2-D, B-2-PW, B-2-F, B-2-G, B-2-H, B-2-J, B-2-K, B-2-R, B-2-T, B-2-V, B-2-Y, B-1-DU, B-1-EU

### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. of R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Shark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
B-2-B, B-2-C	Own 218	6-3½x4½	40-800	12°B	5B	.010	.014	AL	A5R	14mm	.035	.020	TC	TC	120	
B-2-D, B-2-PW, B-1-DU, B-1-EU	Own 230	6-3½x4½	40-800	8°B	—	.010	.014	AL	A5R	14mm	.035	.020	2'A	2'A	125	
B-2-F, B-2-G, B-2-GM, B-2-H, B-2-HH, B-2-HM, B-2-HHM	Own 237	6-3½x4½	40-800	12°B	5B	.010	.014	AL	A5R	14mm	.035	.020	TC	TC	130	
B-2-J, B-2-JM, B-2-K, B-2-KM	Own 251	6-3½x4½	40-800	12°B	5B	.010	.018	AL	A5R	14mm	.035	.020	2'A	2'A	130	
B-2-R	Own 306	6-3½x4½	50-1000	21°B	9B	.010	.018	AL	A5R	14mm	.035	.020	1'A	1'A	110	
B-2-T, B-2-V	Own 331	6-3½x5	50-1000	21°B	9B	.010	.018	AL	A5R	14mm	.035	.020	TC	TC	120	
B-2-Y	Own 377	6-4x5	50-1000	20°B	—	—	—	AL	A5R	14mm	.035	.020	2'A	2'A	133	

### LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (except as listed below)...	30 above 32°	20W@10° to 32°	10W below 10°*	90	90A	90	90A	90	90	C
B-2-K	30 above 32°	20W@10° to 32°	10W below 10°*	90	90A	140	90	90	90	C
B-2-R, B-2-T, B-2-V, B-2-Y	30 above 32°	20W@10° to 32°	10W below 10°†	90	90A	140	90	90	90	C

\*—Use 5W below -10°.

†—Use 10% kerosene below -10°.

—SAE 80 below -10°.

### VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models except as listed below	111	1½	42½	1¾
B-2-R, B-2-T, B-2-V	108	1½	42½	2
B-2-Y	125	1½	70	2

### CAPACITIES

MODEL	Engine Quarts	LUBRICANT CAPACITY		
		Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
B-2-B, B-2-C	5	3½	3½	17½
B-2-D	5	3½	5½	17½
B-2-PW	5	6	6	17
B-1-DU	5	3½	4½	17
B-1-EU	5	6	4½	17
B-2-F	5	6	11	19½
B-2-G, B-2-GM, B-2-H	5	9	11	19½
B-2-HM, B-2-HH, B-2-HHM	5	11	10	21½
B-2-J, B-2-JM	5	11	20	21½
B-2-K, B-2-KM	5	11	20	30
B-2-R	5	11	23	30
B-2-T	5	11	31	30
B-2-V	5	11	31	30
B-2-Y	6	16	31	34

### BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	TERMINAL GROUNDED	
			Pos.	Neg.
B-2-B, B-2-C, B-2-PW	100	15	Pos.	Pos.
B-2-D, B-1-DU, B-1-EU	105	15	Pos.	Pos.
B-2-F, B-2-G, B-2-GM, B-2-H, B-2-HM, B-2-HHM	114	17	Pos.	Pos.
B-2-J, B-2-JM, B-2-K, B-2-KM	120	17	Pos.	Pos.
B-2-R	136	17	Pos.	Pos.
B-2-T, B-2-V, B-2-Y	153	17	Pos.	Pos.

### TENSIONS

MODEL	Cylinder Head (pounds foot)	Main Bearings (pounds foot)	CONNECTING ROD BEARINGS (pounds foot)	
			Intake	Exhaust
All Models except as listed below	Nuts 52-57 Cap Screws 65-70	80-85	45-50	
B-2-R, B-2-T, B-2-V, B-2-Y	55-60 Hot	85-90	50-75	

### FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)	
				Front	Rear
B-2-PW	0-1/8	1½	1½	Load, No Load	8
B-2-B	1/8	1½	1½	Load, No Load	4
B-2-C, B-2-D	1/8	1½	1½	Load, No Load	4
B-1-DU	1/8	1½	1½	Load, No Load	4
B-2-F, B-2-G, B-2-GM, B-2-H, B-2-HH, B-2-HM, B-2-HHM, B-2-J, B-2-JM, B-2-K	1/8-1/8	2	3	Load, No Load	7
B-2-JU	1/8-1/8	2	2½	Load, No Load	7
B-2-R	1/8-1/8	2	1½	Load, No Load	7
B-2-T	1/8-1/8	1	2½	Load, No Load	8
B-2-V, B-2-Y	1/8-1/8	1	3½	Load, No Load	5½

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
TH.....	6	11	B	27
TH339.....	10	11	C	27
RH.....	7	16	D	32 $\frac{1}{2}$
JH.....	10	24A	E	32 $\frac{1}{2}$
KH, LH.....	10	24A	F	32 $\frac{1}{2}$

A—Aux. trans., 8 pt.  
 B—with Tim H100, 20 pt.; H200, 28 pt.; H300, 26 pt.  
 C—with Tim L100, 23 pt.; L200, 31 pt.; L300, 29 pt.  
 D—with Tim Q100, 31 pt.; Q200, 34 pt.; Q300, 32 pt.  
 E—with Tim S200, 38 pt.; S300, 39 pt.  
 F—with Tim U200, 38 pt.; U300, 39 pt.

## BATTERY

MODEL	Amm. Hr. Capacity	Number of Plates	Terminal
			Grounded
TH, TH339.....	110	13	Pos
RH, JH, KH, LH.....	152	19	Pos

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
Her JXD.....	75	**70 **60 *52 **63	56
Her WXLC3.....	75	*122	52
Her RXB, RXC..	75	**105	80
Her RXLD.....	80	175	80
Her JXLD.....	75	**70 **60	56

\*—Front and intermediate.  
 \*\*—Center and rear.

## MAINTENANCE DATA

# DUPLEX



## Series TH, RH, JH, KH, LH

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

TRUCK MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lbs. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG				Breaker Point Gap	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	
TH.....	Her JXD	6-4x4 $\frac{1}{2}$	26-1000	5°B	.....	.006	.008	.010	AL	A5B	14mm	.025
TH339.....	Her JXLD	6-4x4 $\frac{1}{2}$	26-1000	5°B	.....	.006	.008	.010	AL	A5B	14mm	.025
RH.....	Her WXLC3	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	26-1000	5°B	.....	.012	.016	.016	AL	A5B	14mm	.025
JH.....	Her RXB	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	26-1000	2°A	.....	.010	.010	.016	AL	A5B	14mm	.025
KH.....	Her RXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	26-1000	2°A	.....	.010	.010	.016	AL	A5B	14mm	.025
LH.....	Her RXLD	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	26-1000	2°A	.....	.010	.010	.016	AL	AT8	14mm	.025

## VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
JXD.....	58	1.594	43	1.920
WXLC3.....	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
RXB, RXC.....	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
RXLD.....	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
JXLD.....	58	1.594	43	1.920

## FRONT END

TRUCK MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
	All Models.....			
	1/8-1/4	1°	2°	8°

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
TH, TH 339.....	40 above 80°	30@32° to 80°	20W below 32°	140	90	140 Hyp	90 Hyp	A	A	B
RH, JH, KH, LH.....	50 above 80°	40@32° to 80°	20W below 32°	149	90	143 Hyp	93 Hyp	A	A	B

Hyp—Hypoid gear lube. A—Special steering gear lube. B—Chassis lube.

# FEDERAL



## Series 16M, 18M, 25M, 29M, 629M, 35M, 635M, 45M, 645M, 55M, 60M, 65M, 663M, 664M

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC A-After	Comp. Pressure at Cranking Speed			
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
16M Series (1947-50).....	Her JXE	6-3½x4½	40-2500	5°A	.....	.008	.006	.006	AC	44	14mm	.025	.020	10°B	3B	98
18M Series (1944-50).....	Her JXB	6-3½x4½	40-2500	5°B	.....	.008	.008C	.010C	CH	J10COM	14mm	.025	.020	10°B	3B	98
25M Series (1948-50).....	Her JXC	6-3½x4½	40-2500	5°B	.....	.008	.008C	.010C	CH	J10COM	14mm	.025	.020	10°B	3B	98
29M Series (1944-50), 629M Series (1948-50).....	Her JXD	6-4x4½	40-2500	5°B	.....	.008	.008C	.010C	CH	J10COM	14mm	.025	.020	10°B	3B	98
29ML, 629ML (1948-50).....	Her JXLD	6-4x4½	40-2500	5°B	.....	.010	.010	.010	CH	J10COM	14mm	.025	.020	10°B	3B	98
35M, 635M Series (1948-50).....	Con T6371	6-4½x4½	40-2500	16°B	.....	.022	.017	.017	.....	.....	18mm	.025	.....	.....	.....	.....
45M, 55M Series (1944-50), 645M Series (1948-50).....	Con T6427	6-4½x4½	55-2600	16°B	.....	.022	.017	.017	CH	6COM	18mm	.025	.020	15°B	.....	.....
60M Series (1944-50).....	Con 22R	6-4½x5½	30-1000	5½°B	.....	.014	.012	.012	CH	8COM	18mm	.025	.020	7°B	.....	98
65M, 663M, 664M Series.....	Con R-6602	6-4½x5½	55-2600	5½°B	.....	.017	.017	.017	CH	8COM	18mm	.025	.020	7°B	.....	98

C—Cold.

### VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
16M, 18M, 25M, 29M, 629M Series.....	52	1½	31	1½
29ML, 629ML Series.....		112 at 1.8	28 length	
35M, 635M, 45M, 645M, 55M Series.....	O. 129	1.458	71	1½
I. 57	1½	12.8	1½	
O. 110	1½	56½	2½	
I. 50	1½	22½	2½	
65M, 663M, 664M Series.....	O. 160-170	1½	67-73	2½
I. 82-98	1½	33-37	2½	

I—Inner. O—Outer.

### FRONT END

MODEL	TOE-IN (In Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
All Models (1944-50).....	1	1	3	8

### LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (1944-50).....	N-40, H-50 @50° to 110°	30@15° to 50°	10W@-20° to 15°	180	90	160	90	.....	.....	160
N—Normal service. H—Heavy duty.										

### CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
16M.....	8	4	8	20
18M, 25M2.....	9	13	12A	25
29M, 629M Series.....	9	13*	12A	25
35M, 35M2, 635M.....	8	20*	16A	31
45M, 45M2, 645M.....	8	20*	19	31
55M, 55MA.....	10	12**	38	30
60M, 60M2.....	10	12**	40	40
65M2, 65MA.....	14	12**	40A	40
663MA, 664MA, 664MAB.....	14	12**	40A	40

\*—In "MA" Models add 10 pts. for aux. trans.

\*\*—In "MA" Models add 13 pts. for aux. trans.

A—On 6-wheelers, same for each rear axle.

### BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
16M, 18M, 25M, 29M, 629M, 35M, 635M Series.....	138	17	Pos
45M, 645M, 55M, 60M Series.....	153	19	Pos
65M2, 65MA, 663MA, 664MA, 664MAB.....	153*	19	Pos
See data under CONTINENTAL, PAGE 92			
—2 Batteries.			

\*—Center and rear.

\*\*—Front and intermediate.

### TENSIONS

MODEL	Cylinder Head (pound-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
16M, 18M, 25M, 29M, 629M Series.....	75	*60 **70	58
35M, 635M, 45M, 845M, 55M, 60M, 65M, 663M, 664M Series.....			

**CAPACITIES**

MODEL	Engine Quarts	Trans- mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
F1 (6-cyl.)	5A 23½BC	3	9	
F1 (8-cyl.)	5A 23½BC	3	11½	
F2, F3 (6-cyl.)	5A 5B	3	9	
F2, F3 (8-cyl.)	5A 5B	3	11½	
F3, Parcel Del.	5A 6	3	9	
F4, F5, F5 COE (6-cyl.)	5A 5BD	5E	9	
F4, F5, F5 COE (8-cyl.)	5A 5BD	5E	11½	
F6, F6 COE (226 cu in.)	5A 5D	10E	9	
F6, F6 COE (8-cyl.)	5A, 5D	10E	11½	
F6, F6 COE (254 cu in.)	6A 8	10E	9	
F7	9A, 10	11	16½	
F8	9A, 10	22F	16½	

A—Refill shown—when filter replaced add 1 qt.  
 B—Optional 3-speed H. D. Transmission—6 pts.  
 C—Optional 4-speed Transmission—5 pts.  
 D—Optional 4-speed Synchro-Silent Trans.—8 pts.  
 E—Optional 2-speed axle on F5 or F6—15 pts.  
 F—Optional 2-speed axle—19 pts.

**BATTERY**

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
F1 thru F6 (6-cyl.)	100	17	Pos
F1 thru F4 (8-cyl.)	90	15	Pos
F5 and F6 (8-cyl.)	100	17	Pos
F5 Schoolbus	120	17	Pos
F7 and F8	120	17	Pos

**TENSIONS**

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
F1 through F6	65-70	95-105	45-50
F7 and F8	65-70	120-130	52-60

**Models F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8****TUNE UP**

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs TC B-Before A-After	Spark Occurs Fly-Wheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size			
F-1, F-2, F-3, F-4, F-5, F-6	Own 7HT	6-3.3x4.4	50-2000	11°B		.015	A	B	CH	H-9	14mm	C	.025	TC
F-6	Own 8MTH	6-3.3x4.4	50-2000	11°B		.015	A	B	CH	H-9	14mm	C	.025	TC
F-1, F-2, F-3, F-4, F-5, F-6	Own 8RT	8-3½x3¾	50-2000	TC		.015	D	E	CH	H-9	14mm	C	.015	2°B
F-7, F-8	Own 8EQ	8-3½x4½	50-2000	5°B		.015	.010-.012	.014-.016	CH	H-9	14mm	C	.015	4°B

A—.009-.011 cold.

B—.013-.015 cold.

C—.025-.028.

D—.013-.015 cold.

E—.017-.019 cold.

Note: Previous setting on valve tappets on F7-F8s with hydraulic push rods, "O"

**VALVE SPRINGS**

MODEL ENGINES	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
6-cyl. 226 engine	112-120	1.75	47-53	2.109
6-cyl. 254 engine	112-120	1.75	47-53	2.109
8-cyl. 239 engine	76-80	1.84	37-40	2.13
8-cyl. 337 engine	140-152	1.32	62-68	1.68

**FRONT END**

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
All F-Series Trucks	0-1½	1¼-1	1-3½	7½-8

**LUBRICATION**

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
F-1 F-2, F-3, F-4, F-5, F-5 COE F-6, F-6 COE F-7, F-8	F-7 and F-8 Heavy Duty Oils recommended. F-1 thru F-6 Regular Premium or Heavy Duty oils depending on type of service. Temps. above +10°F: SAE 20 or 30. Min. Temps. above -10°F: SAE 10 or 10W. Lower than -10°F: 10W plus 10% kerosene.		90EP a140EP	80EP \$90EP	90HM 140EHM	90EHM *90HM	90HM *90HM	90EP 90EP	90EP 90EP

EP—Mild extreme pressure gear oil.

HM—Hypoid or multi purpose lubricant.

\*Temps. below -10°F use SAE 80.

a—F3 parcel delivery SAE 90 mild E. P. gear oil.

\$—F3 parcel delivery SAE 80 mild E. P. gear oil.

†—Temps. above 100°F use SAE 140.

EHM—Mild E. P. gear oil, or multi purpose lube.

# FWD



## Models HA, HG, HR, H6x6, LD, SU, YU, ZU, M7, M7D, M10, M10D, M6x6, M6x6D, MU6x6

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG			Breaker Point Gap	Cylinder Head (pounds per square inch)	Main Bearings (pounds per square inch)	Connecting Rod Bearings (pounds per square inch)	
				TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap		
HA.	Wau BZ	6-4x4 $\frac{1}{2}$	40-1500	TC	O	.010	A	B	CH	J9	14mm	.025	.020	4 $\frac{1}{2}$ 109
HR, HG, HRT, H6x6.	Wau MZA	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	40-1500	8 $\frac{1}{2}$ B	3B	.008	C	D	CH	7COM	14mm	.025	.020	5 $\frac{1}{2}$ 115
SU.	Wau SRKR	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	40-1500	8 $\frac{1}{2}$ A	3A	.004	C	E	CH	J9	14mm	.025	.020	4 $\frac{1}{2}$ 119
YU.	Wau 140GK	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	40-1500	5 $\frac{1}{2}$ A	13 $\frac{1}{2}$ A	.010	A	D	CH	6COM	18mm	.025	.020	TC 130
ZU.	Wau 140GZ	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	40-1500	5 $\frac{1}{2}$ A	13 $\frac{1}{2}$ A	.012	.018	CH	6	18mm	.025	.020	TC 130	
M7, M10, M6x6, MU6x6.	Wau 145GK	6-5 $\frac{1}{2}$ x6	40-1500	5 $\frac{1}{2}$ A	2A	.006	F	G	CH	6	18mm	.025	.020	TC 120
M7D, M10D, M6x6D.	Buda 844	6-5 $\frac{1}{2}$ x6 $\frac{1}{2}$	30-1200	20B	.....	.010	.015	.015	AL	AT8	14mm	.025	.020	TC 120
LD.	Her QXLD-3	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	35-1600	5 $\frac{1}{2}$ B	.....	.006	.008	.010	AL	AT8	14mm	.025	.020	TC 120
A—.010-.012 cold.	B—.014-.016 cold.	C—.008-.010 cold.	D—.018-.021 cold.	E—.024-.026 cold.	F—.012-.014 cold.	G—.023-.025 cold.								

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
H6x6.	100	1 $\frac{1}{2}$	64	2 $\frac{1}{2}$
HA.	101-119	1 $\frac{3}{4}$	56-66	2 $\frac{1}{2}$
LD.	39	1 $\frac{1}{2}$	18	1 $\frac{1}{2}$
HG, HR, HRT.	93-109	1 $\frac{1}{2}$	59-69	2 $\frac{1}{2}$
SU.	89-99	2 $\frac{1}{2}$	54-64	2 $\frac{1}{2}$
YU, ZU (1948-50).	86-6	2 $\frac{1}{2}$	31-2	1 $\frac{1}{2}$
M7, M10, M6x6, MU6x6.	105-115	3 $\frac{1}{2}$	65-75	3 $\frac{1}{2}$
M7D, M10D, M6x6D.	175	2 $\frac{1}{2}$	65	2 $\frac{1}{2}$

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
HA, HR, HRT, HG	1 $\frac{1}{2}$ -1 $\frac{1}{8}$	1 $\frac{1}{2}$	1	8
LD	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	0
SU (1950)	1 $\frac{1}{2}$ -1 $\frac{1}{8}$	1 $\frac{1}{2}$	2	8
YU, (1948-50 only), ZU H6x6, MU6x6, M7, M10, M6x6, M7D, M10D, M6x6D	1 $\frac{1}{2}$ -1 $\frac{1}{8}$	1	5	0

## LUBRICATION

MODEL	ENGINE		TRANSMISSION		FRONT AND REAR AXLE		STEERING GEAR		UNIVERSAL JOINT	
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter		
HA, HR, HRT, HG, H6x6.	(S)L30, H40	(MW)L20, H30	(W)L10W, H20W	140	90	90EP	80EP	140	90	140-90
M7, M10, M6x6, MU6x6.	(S)L40, H50	(MW)L30, H40	(W)L20W, H30W	140	90	90EP	80EP	140	90	140-90
SU, YU, ZU.	(S)L40, H50	(MW)L30, H40	(W)L10W, H20W	140	90	90EP	80EP	140	90	140-90
M7D, M10D, M6x6D.	50 above 90°	30@32° to 90°	10 below 32°	140	90	90EP	80EP	140	90	140-90
LD.	(S) L30, H40	30-50°, L30, H40	0-30°, L20, H20*	140	90	90EP	80EP	140	90	140-90
H—Heavy duty. L—Light duty. EP—Extreme pressure lube. S—Summer. W—Winter. MW—Mild winter. *Below 0°, L10, H10.										

## CAPACITIES

MODEL	LUBRICANT CAPACITY		
	Engine Quarts	Trans-mission Pints	Rear Axle Pints
HA	10	20	5A
HR, HG, HRT, H6x6	12	20	5A
LD	6	6	9C
SU	12	24	8A
YU (1948-50 only)	14	28	12A
ZU	14	28	8A
M'	20	28	18B
M10	20	28	20B
M6x6	20	29	20B
M7D	24	28	18B
M10D	24	28	20B
M6x6D	24	29	20B
MU6x6	20	28	12A

## BATTERY

MODEL	Amp. Hr. Capacity	Numbers of Plates	Terminal Grounded
LD	130	19	Pos
HA, HR, HRT, HG, SU*, YU*, ZU*, M6X6*, M7*, M10*, M7D**, M10D**, M6X6D**	150 19	Pos	
H6X6, MU6X6*	150 19	Pos	
—	153	19	Pos

\*—2 Batteries.

\*\*—4 Batteries.

ENGINE MODEL	CONNECTING ROD BEARINGS (POUNDS PER SQUARE INCH)		
	MAIN BEARINGS (POUNDS PER SQUARE INCH)	CYLINDER HEAD (POUNDS PER SQUARE INCH)	CONNECTING ROD BEARINGS (POUNDS PER SQUARE INCH)
Wau BZ	73-75	87-93	66-70
Wau MZA	73-75	96-100	66-68
Wau SRKR	73-75	129-133	121-125
Wau 140 GK	130-134	130-134	96-100
Wau 140 GZ	130-134	130-134	120-125
Wau 145 GK	150	242-250	65-70
Bud 8DC 844	150	245-275	150-160
Her QXLD-3	60	60*	39

\*—Cent. and rear, bal. 70.

G—.023-.025 cold.

F—.012-.014 cold.

H—.023-.025 cold.

I—.020-.022 cold.

J—.018-.020 cold.

K—.016-.018 cold.

L—.014-.016 cold.

M—.012-.014 cold.

N—.010-.012 cold.

O—.008-.010 cold.

P—.006-.008 cold.

Q—.004-.006 cold.

R—.002-.004 cold.

S—.001-.003 cold.

T—.000-.002 cold.

U—.000-.001 cold.

V—.000-.000 cold.

W—.000-.000 cold.

X—.000-.000 cold.

Y—.000-.000 cold.

Z—.000-.000 cold.

AA—.000-.000 cold.

BB—.000-.000 cold.

CC—.000-.000 cold.

DD—.000-.000 cold.

EE—.000-.000 cold.

FF—.000-.000 cold.

GG—.000-.000 cold.

HH—.000-.000 cold.

II—.000-.000 cold.

JJ—.000-.000 cold.

KK—.000-.000 cold.

LL—.000-.000 cold.

MM—.000-.000 cold.

NN—.000-.000 cold.

OO—.000-.000 cold.

PP—.000-.000 cold.

QQ—.000-.000 cold.

RR—.000-.000 cold.

SS—.000-.000 cold.

TT—.000-.000 cold.

UU—.000-.000 cold.

VV—.000-.000 cold.

WW—.000-.000 cold.

XX—.000-.000 cold.

YY—.000-.000 cold.

ZZ—.000-.000 cold.

AA—.000-.000 cold.

BB—.000-.000 cold.

CC—.000-.000 cold.

DD—.000-.000 cold.

EE—.000-.000 cold.

FF—.000-.000 cold.

GG—.000-.000 cold.

HH—.000-.000 cold.

II—.000-.000 cold.

JJ—.000-.000 cold.

KK—.000-.000 cold.

LL—.000-.000 cold.

MM—.000-.000 cold.

NN—.000-.000 cold.

OO—.

## MAINTENANCE DATA

### CAPACITIES

MODEL	LUBRICANT CAPACITY			Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	
100 FC.	8	1½a	4½	17
150 FC, FP.	8	1½a	6½	18
250 FC.	8	6	6½	18
280 FC, 300 FC, FCS.	8	6b	11½m	18
350 FC, FF.	8	6b	12h	18
400 HCS.	8	12	12	18
400 HCW.	8	6c	8½†	18
450 HC, HCS, HF, HFR.	8	12	20np	18
470 HC, HF.	8	12	22q	18
520 HC, HCR, HCS, HF, HFR.	9	12d	20	25
600 HC, HF.	9	12df	22q	25
620 HC, HCR, HF, HFR,	9	14f	22q	25
700 HC, HF.	9	9f	22q	27
840 HC, HCR, HF, HFR.	9	9f	22q	27
640 HDCR, 650 HDCR.	11	14	22	26
650 HC, HF.	9	12df	22q	25
720 HC, HCR, HF, HFR.	9	9f	22q	25
720 HCW, HFW.	9	9f	22½s	25
740 HC, HCR, HF, HFR.	9	9f	30r	27
740 HDC, HDCR, HDF.	11	9f	30r	26
750 HC, HCR, HF, HFR,	9	9f	20j	27
890 HC.	9	9f	20j	27
750 HDC, HDCR, HDF,	11	9	20j	26
750 HDCW.	11	9	22†	26
770 HC.	9	14ef	38	27
850 HC, HF.	9	9ef	38k	27
850 HCW.	9	9ef	32†	27
870 HC.	9	9ef	24	27
870 HC.	11	9ef	24	26
900 HDC.	15	9g	38	37
900 HDCR.	15	9g	32	37
910 HDC.	15	9g	30lr	37
940 HDC.	15	9g	20	37
950 HDCW.	15	9g	17†	37
970 HDCW.	15	9	32†	37
—Standard trans. and axles.	d-4452, 4453, 4-spd. trans., 14 pts.			
†—Each axle.	e-5552, 5553, 5-spd. trans., 9 pts.			
a—4-spd. trans., 6 pts.	f—Aux. trans., 8 pts.			
b—with 5-spd. trans., 12 pts.	g—Aux. trans., 12 pts.			
c—Aux. trans., 6 pts	h—with 2-spd. axle, 13 pts.			
torq. divider, 3 pts.				

### VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
228, 248, 270.	124-140	1.505	53-63	1.821
318, 360.	145-157	1.13	67½-74½	1.13
426, 503.	160-172	1.24	67½-74½	1.16
All Diesels.	140	1.04	44	2.15

### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Comp. Pressure at Cranking Speed	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap		
100 FC, 150 FC, 250 FC, 280 FC.	Own 228	6-3½x3½	35-40	14°B	.....	.014	.012	.020	AC	44 COM	14mm	.030	A	0°B
300 FC, 350 FC, FF, 400 HCS, HCW.	Own 248	6-3½x3½	35-40	14°B	.....	.014	.012	.020	AC	44 COM	14mm	.030	A	5°B
450 HC, HCS, HF, HFR, 470 HC, HF.	Own 270	6-3½x4	35-40	14°B	.....	.014	.012	.020	AC	44 COM	14mm	.030	A	5°B
520 HC, HCR, HF, HFR, HCS, 600 HC, HF, 650 HC, HF.	Own 318	6-3½x4½	35-40	16°B	.....	.022	.012	.018	AC	44 COM	14mm	.030	A	6°B
620 HC, HCR, HF, HFR, 700 HC, HF.	Own 360	6-4½x4½	35-40	16°B	.....	.022	.012	.018	AC	44 COM	14mm	.030	A	6°B
770 HC.	Own 426	6-4½x5	35-40	30°24' B.	.....	.022	.012	.018	AC	44 COM	14mm	.030	A	6°B
640 HC, HCR, HF, HFR, 720 HC, HCR, HF, HFR, HCW, HFW, 870 HC.	Own 503	6-4½x5½	35-40	30°24' B.	.....	.022	.012	.018	AC	44 COM	14mm	.030	A	6°B
740 HC, HCR, HF, HFR, 750 HC, HCR, HF, HFR, 850 HC, HCW, HF, 890 HC.	Own 4-71	4-4½x5	4°@Idle 28°@Gov.	.....	.....	a	b	.....	Diesel	.....	.....	.....	.....	110
640, 650, 740, 750 HDCR, 740, 750 HDC, 650, 740, 750 HDCR, 740, 750 HDC, 650, 740, 750 HDCW.	Own 6-71	6-4½x5	4°@Idle 25°@Gov.	.....	.....	a	b	.....	Diesel	.....	.....	.....	.....	110

A—.018"-.024". \*—Minimum.  
a—Injector Timing gage ht.—1.460".

†—Injection begins 13° before TDC; ends 3° before TDC. Air intake opens 46° before TDC; closes 46° after TDC.  
b—Exhaust valve—.008" GO—.010" NO GO (Hot).

### LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
FC, FCS, and FF (1950), HCS-400 through HF-470.	20 above 32°	10W below 32°	.....	50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES
HC-520 through HC-890.	30 above 32°	10W below 32°	.....	50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES
All Diesels.	H30 above 32°	H20W — 30°-0°	H10W below 0°	50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES

H—Heavy duty.  
B—Use 80 Hyp below 0°.

\*Worm axles straight gear oil.  
Hyp—Hypoid truck-type.

ES—Aviation grade engine oil or heavy duty engine oil.  
No. 1 SG—No. 1 grade steering gear lubricant.

A—Severe conditions use 140 Hyp.



### Series FC, FF, FP, HC, HF and DIESELS

### BATTERY

#### MODEL

	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
100, 150, 250, 280, 300, 350, 400 HCW; 450 HC, HF, HFR; 470 HC, HF.	100	15	Pos
300 FCS; 400 HCS; 450 HCS; 520 HCS.	125	19	Pos
520, 600, 640, 650, 700, 720, 750, 770, 850, 870, 890.	115	17	Pos
All Diesels.	205	27	Pos

### TENSIONS

ENGINE MODEL	Cylinder Head (pounds per square foot)	Main Bearings (pounds per square foot)	Connecting Rod Bearings (pounds per square foot)
100 FC.	70-80	80-90	40-45
150 FP.	75-80	90-100	65-75
250 FC, 280 FC.	75-80	90-100	80 min.
300 FC, FCS.	75-80	90-100	65-75
350 FC.	165-175	155-185	65-75

### FRONT END

#### MODEL

	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
100 FC.	1½-3	1°30'	0°20'	7°10'
150 FP.	1½-3	1°30'	0°30'	7°10'
150 FC.	1½-3	1°30'	2°30'	7°10'
250 FC, 280 FC.	1½-3	1°30'	1°	7°10'
300 FC, FCS.	1½-3	1°30'	1°15'	7°10'
350 FC.	1½-3	1°30'	1°15'	7°10'
350 FF.	1½-3	1°30'	1°25'	7°10'
400 HCS, HCW, HC, HCR, HCS; 470 HC.	1½-3	1°30'	1°45'	5°
450 HF, HFR; 470 HF.	1½-3	1°	2°30'	4°
520 HC, HCR.	1½-3	30°1°	2°30'	4°
520 HCS, HF; 600 HC, HF; 620 HC, HCR, HF, HFR; 640 HC, HCR, HF, HFR; 650 HC, HF; 700 HC; 840 HC, HCR, HF, HFR; 850 HC, HF; 870 HC, HCR, HF, HFR; 890 HC; 940 HCS.	1½-3	30°1°	2°30'	5°30'
700 HC; 740 HF, HFR, HDF; 750 HF, HFR, HDF, HFR; 770 HC; 850 HC, HCW, HF; 870 HC, HCR, HF, HFR; 890 HC, HCR, HF, HFR; 900 HCS, HCR; 920 HCW, HF; 970 HDCW.	1½-3	30°1°	2°30'	8°

\*—Figures for vehicle loaded.

Vehicle light minimum caster 1°.

# INTERNATIONAL



## Models L, LC, LF and LM Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before	Spark Occurs Fly-Wheel Teeth °TC B-Before	Comp. Pressure at Cranking Speed	
				°TC	Flywheel Teeth °C		Intake	Exhaust	Make	Type	Size	Gap		
L-110 to L-153, inc. LM-120 to LM-150, inc.	SD-220	6-3 $\frac{1}{2}$ x 3 $\frac{1}{2}$	15-20*	10°B		.023	F	F	a		14mm	.030	.022	2 $\frac{1}{2}$ "
L-160 to L-165, inc. LC-160, 161, 162	SD-240	6-3 $\frac{1}{2}$ x 4 $\frac{1}{2}$	15-20*	10°B		.023	F	F	a		14mm	.030	.022	2 $\frac{1}{2}$ "
L-170 to L-184, inc. LC-180, 181, 182	BD-269	6-3 $\frac{1}{2}$ x 4 $\frac{1}{2}$	15-20*	5°B		.023	F	F	b		14mm	.030	D	3 $\frac{1}{2}$ "
L-185, L-190 to L-195, inc.	RD-372	6-4 $\frac{1}{2}$ x 4 $\frac{1}{2}$	15-20*	8°B		.023	F	F	c		14mm	.030	D	5 $\frac{1}{2}$ "
L-200, 201, 202, 204, LF-190, 191, 192	RD-406	6-4 $\frac{1}{2}$ x 4 $\frac{1}{2}$	15-20*	8°B		.023	F	F	c		14mm	.030	D	5 $\frac{1}{2}$ "
L-210, 211, LF-210, 211, 212	RD-450	6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	15-20*	8°B		.023	F	F	d		14mm	.030	D	5 $\frac{1}{2}$ "
L-220, L-225	Cont. R-6602	6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	15-20*	12°B		.020	.020	.020			18mm	.025		
*—Minimum at idle.	F	-.018-.020.	D	.018-.024.	a—AC-44 Com., Champion J-7, Auto-Lite AN5. c—AC-43 Com., Champion J-6, Auto-Lite AN5.									
b—AC-45 Com., Champion J-8, Auto-Lite AN7.					d—AC-82 Com., Champion 5 Com., Auto-Lite BT4.									

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
SD-220, SD-240	145	1.683		2 $\frac{1}{2}$ *
BD-269	107	1.668		2 $\frac{1}{2}$ *
RD-372, RD-406, RD-450	85 $\frac{1}{2}$	1.503		2 $\frac{1}{2}$ *
Cont. R-6602	0	137	1.706	2 $\frac{1}{2}$ *
	I.	85	1.750	2 $\frac{1}{2}$ *
	O.	165	1.750	2 $\frac{1}{2}$ *

\*—Free length.

O—Outer.

I—Inner.

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
L-110, 111, 112, L and LM-120, 121, 122, L-130, 131, 132	1 $\frac{1}{8}$ -1 $\frac{1}{16}$	2	2-3	4
All Other Models	1 $\frac{1}{8}$ -1 $\frac{1}{16}$	1	2-3	4

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
SD, BD, RD, R-6602	M30 above 32° M40 above 32° SD, BD, RD, R-6602	20W above 10° 20W above 10°	10W below 10° 10W below 10°*	140a	90	140a	90			
H SAE 40† H SAE 50†				140a	90	140a	90			
				140a	90	140a	90			

\*—Temperatures below -10° F., use SAE 10W + kerosene.  
H—Highway service with sustained high engine speeds.

†—If starting ability will not permit, use next lower viscosity.  
a—Use SCL, EP gear oil or multipurpose gear lubricant.

## CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
L-110, 111, 112, 120, 121, 122	7	3a	4	17
LM-120, 121, 122	7	6	4	17
L-130, 131, 132	7	5a	5	17
L-150, 151, 152, 153	7	5b	5	18
LM-150, 151, 152	7	6	5	17
L-160, 161, 162, 163, 164, 165, LC-160, 161, 162	7	8	8c	18
L-170, 171, 172, 173, 175, LF-170, 171, 172	7	8d	8c	21
L-180, 181, 182, 183, LC-180, 181, 182	7	12	11e	21
L-184	7	12	20fg	21
L-174	7	8d	11e	21
L-185	9	12h	11e	28
L-190, 191, 192, 193, 195	9	19	20fg	28
L-194, 200, 201, 202	9	19	18fg	28
LF-190, 191, 192	9	19	11	28
L-204	9	19	38j	28
L-205	9	24	18f	28
L-210, 211	9	24	38j	28
LF-210, 211, 212	9	24	11	28

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
SD-220, SD-240	105		Pos
BD-269	135		Pos
RD-372, RD-406, RD-450, Cont. R-6602	152		Pos

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
SD-220, SD-240	85-95	75-85	45-55
BD-269	75-85	100-110	60-70
RD-372, RD-406, RD-450	100-110	100-110	75-85
Cont. R-6602	100-110	105-115	100-110

## MAINTENANCE DATA

### CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
521, 522	20	16	38	54	54
523	20	16	17ea	54	54
524	20	16	32ea	54	54
548	20	16	26ea	54	54
552	20	16	26ea	54	54
584	20	16	28ea	54	54
585	10	24	30	58	58
825	20	16	32ea	54	54
829	10	24	14ea	58	58
888	28	16	.....	54	54

### BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded	
			Pos	Pos
All Gasoline Models (1946-50)	168*	21	Pos	Pos
All Diesel Models (1946-50)	168**	21	Pos	Pos

\*—2 Batteries. \*\*—4 Batteries.

# KENWORTH



### TENSIONS

ENGINE MODEL	Cylinder Head (pounds per square foot)	Main Bearings (pounds per square foot)	Connecting Rod Bearings (pounds per square foot)
Cum HB-600	430-450	310-330	105-115
NHB-600	175	125-133	95-100
Wau 140GZB	175	125-133	95-100

### Models 521, 522, 523, 524, 548, 552, 584, 585, 825, 829, 888

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95.

### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG			Breaker Point Gap	Spark Occurs *TC B-Before A-After	Spark Occurs Fly-Wheel Teeth *TC B-Before A-After	Comp. Pressure a. Cranking Speed	
				*TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap		
521, 522, 523, 524, 548, 552, 584, 825	Cum HB-600	6-4½x8	55	5°B	.....	.014	.022	.....	.....	.....	Diesel	.025	.020	525
585, 829	Wau 140GZB	6-4½x5½	40-2600	15°B	.....	.014C	.025C	.....	.....	.....	Diesel	.....	.....	130
888	Cum NHB-600	6-5½x6	55	120°B	.....	.014	.027	.....	.....	.....	.....	.....	.....	.....

C—Cold

### VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
521, 522, 523, 524, 548, 552, 584, 825	136	2½	87	2½
888	109	1½	78	2½
585, 829	*127	1½	67	2½
	**70	1½	30	1½

\*—Outer spring \*\* Inner spring.

### FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
521, 522, 523, 524, 548, 585, 825, 829, 552	1/8 ± 1/32	1	2 1/2-3	5 1/2
584, 888	1/8 ± 1/32	1	1 1/2 ± 1/4	0

### LUBRICATION

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter	
521, 522	(S)30		(W)20		*50	*50	140EP	90EP	140	140	140
523, 524, 548, 552, 584, 825, 888	(S)30		(W)20		50	140	90	140	140	140	140
829	(S)30		(W)20		140	90	140	90	140	140	140
585	(S)40, 50-70°	(W)20, below 30°			140	90	140EP	140EP	140	140	140

S—Summer. W—Winter. \*—Straight mineral oil. EP—Extreme pressure lube.

# MARMON-HER.



## Models DVL-4, LD7 and Q, R, MH, MH-RH, MH-RC, V5, V6 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.H.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)			SPARK PLUG	Breaker Point Gap	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
				°TC	Flywheel Teeth TG		Intake	Exhaust						
DVL-4 (1948-50)	Willys-CJ-3A	4-3½x4¾	50-30	9°B	.....	.017	.014	.014	AL	AN-7	14mm	.020	TC	TC
LD7 and R Series, V5, V6	Ford 239	8-3½x3¾	57-2000	TC	.....	.015	A	B	CH	H-9	14mm	C	2°B	115
Q Series	Ford 337	8-3½x4¾	50-2000	14°B	.....	.....	.....	.....	CH	H-9	14mm	C	4°B	110
MH440-4, MH440-6 (1946-50)	Her WXLC3	6-4½x4¾	36-1600	2°A	.....	.010	.008	.010	CH	H-10	14mm	.025	TC	112
MH555-4, MH555-6 (1946-50)	Her RXC	6-4½x5½	26-2600	2°A	¼A	.010	.008	.010	CH	NO8	18mm	.025	TC	103
MH-RH	Her RXLDH	6-4½x5½	26-1600	2°A	.....	.010	.006	.010	CH	H-10	14mm	.025	TC	80
MH-RC (1950)	Her RXC	6-4½x5½	26-1600	2°A	.....	.010	.008	.010	CH	H-10	14mm	.025	TC	90
a-.010-.012 cold.	b-.014-.016 cold.	c-.029-.032.												

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
DVL-4	116	1½	50	2½
LD7 and R Series, V5, V6	76-80	1.84	37-40	2.13
Q Series	140-152	1.32	62-68	1.68
MH-440-4, MH-440-6, MH555-4, MH555-6, MH-RH, MH-RC	102	2½	50	2½

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	
DVL-4	(S)30	(W)20	10W below 10°	140	90	140A	90A	140	140	140
LD7	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	90B(Hyp)	90B(Hyp)	90EP	90EP	140
R-3, R-4	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	140B	90B	90EP	90EP	140
R-5, R-6	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	90B	90B	140	140	140
Q Series	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	140B	140B	140	140	140
MH Series, MH-RH, MH-RC	(S)40	(W)20	10W below 10°	140	90	140B	90B	140	140	140
V5, V6	(S)30	(W)20	10W below 10°	140	90	140B	90B	90°	90	140

\*Below -10°, use 10% kerosene. a-Front axle only. b-Same for front axle. (S)-Summer. (W)-Winter. (EP)-Mild extreme-pressure lube. (Hyp)-Hypoid gear lube.

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
DVL-4	4½	4	a	17
LD7	5½ or more	5½	2½	21
R-3	5½	3c	23	23
R-4	5½	5½	23	23
R-5, R-6, V5, V6	5½	15x	32	32
Q Series	8	15x	32	32
MH440-4	8	15x	32	32
MH440-6	8	15x	32	32
MH555-4	9	21f	36	36
MH555-6	9	21f	36	36
MH-RH	13	21f	36	36
MH-RC	10	16	15e	32

a-Front axle only.  
b-Front axle, 3½ pt.  
c-Front axle, 2½ pt.  
d-Front axle, 6½ pt.  
e-Front axle, 20 pt.  
f-Each of two axles.

## BATTERY

MODEL	AMM. Hr. CAPACITY		
	Number of Plates	Terminal Voltage	Grounded
DVL-4	120	17	Pos
LD7 and R & V Series	100	17	Pos
Q Series	120	17	Pos
MH440-4, MH440-6	160	17	Pos
MH555-4, MH555-6, MH-RH, MH-RC	120*	13	Pos

\*—12-Volt Battery.

## TENSIONS

MODEL	CYLINDER HEAD (POUNDS FEET)	MAIN BEARINGS (POUNDS FEET)	CONNECTING ROD BEARINGS (POUNDS FEET)	
			center and rear.	front and intermediate.
DVL-4	60-65	65-70	50-55	
LD7, R, Q & V Series	55-60	95-105	45-50	
MH440-4, MH440-6	60	70*	105	53†
MH555-4, MH555-6	75	105*	105	115†
MH-RH	80	70*, 175	80	
MH-RC	75	105	90	

\*—Center and rear.  
†—With  $\frac{1}{16}$  in. con. rod. ‡—With  $\frac{1}{16}$  in. con. rod.

## FRONT END

MODEL	TOE-IN (IN INCHES)	CAMBER (IN DEGREES)	CASTER (IN DEGREES)		K. P. SLANT (IN DEGREES)
			FLY-WHEEL FEET B-BEFORE	FLY-WHEEL FEET A-AFTER	
DVL-4	0-16	2	2	2	9
LD7	17-22	2	2	2	12
R-3, R-4	17-22	0	2	2	12
R-5, R-6, V5, V6	0-28	0	0	0	12
Q Series	17-22	0	0	0	12
MH440-4, MH440-6, MH-RC	17-22	0	0	0	1
MH555-4, MH555-6, MH-RH	17-22	0	0	0	1

# MILFORD



Models QX, QY

## MAINTENANCE DATA

# PETERBILT



Models 280, 350, 360, 370, 380, 390

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
MILFORD—QX.....	168	21	Pos
QY.....	120	17	Pos
PETERBILT—All Models.....	152*	19	Pos

\*—2 Batteries.

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
MILFORD QX.....	73-75	96-100	67-69
QY.....	130-134	130-134	121-125
PETERBILT All Models.....	430-450	310-330	105-115

## CAPACITIES

MODEL	Engine Quarts	Trans- mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
MILFORD—QX.....	8	12	9ea	34
QY.....	10	12	17ea	56
PETERBILT—280.....	20	18	26	60
350.....	20	18	14ea	60
360, 370, 380, 390.....	20	18	20ea	60

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Not unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly- Wheel Teeth °TC B-Before A-After	Conn. Pressure at Cranking Speed	
				%TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size				
MILFORD—QX.....	Wau 6MZA	6-4½x4¾	40-1500	8°A	.....	.008	.010C	.018C	CH	7 COM	18mm	.025	.018	24°B TC	115
QY.....	Wau 140GK	6-4½x5½	40-1500	5°A	.....	.010C	.016C	CH	7 COM	18mm	.025	.018	115	130	
PETERBILT—All Models.....	Cum HB600	6-4½x6	55	15°A	.....	.025	.025	CH	7 COM	18mm	.025	Diesel	115	130	

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
MILFORD—QX.....	101	1½	64	2½
QY.....	88	1½	31	2½
O. {	55	1½	26	1½
I. {	136	2½	67	2½
PETERBILT—All Models.....				

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
MILFORD—All Models.....	0-½	1	N1	8
PETERBILT—All Models except as noted.....	0-½	1	1½	8
All 1950 Models with FE 900 Axle.....	0-½	1	1½	5½

N—Negative.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
MILFORD—All Models.....	40 above 50°	30@30°-50°		140	90	140	90	140	90	140
PETERBILT—All Models.....	30 above 90°	20@60°-90°	10@10°-60°	140	90	140	90	140	90	140

S—Summer. W—Winter.

# OSHKOSH



## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
Her WXLCO-3	85	Note 1	53
Her RXC, RXCO	85	Note 2	118
Her RXLD	100	175	158
Her DRXC	Note 3	175	158
Her JXLD	95	Note 6	52
Cum HB-600, HRB600, NHB600, NHRBS600	430-450	310-330	105-115
Bud 6DC-844			
Bud 6DCS-844			
Bud 6MO-779			
Bud 6M-893	Note 4	245-275	150-160
Hall-Scott 400	Note 5	180-200	130-140
Note 1—Front intermed. 105; CTR & RR 70.			
Note 2—Front intermed. 123; CTR & RR 105.			
Note 3— $\frac{1}{2}$ "-175, 1"-280.			
Note 4— $\frac{1}{2}$ "-95-105; $\frac{3}{4}$ "-150-160.			
Note 5—Large 230-250; small 30-40.			
Note 6—Front intermed. 70; CTR & RR 60.			

## Models W212, W312, W1700, W700, W703, W703D, W705, W712, W906, W906R, and W1600, W2200 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at R.P.M.	Intake Valve Opens B-Before A-After		Operating Tapet Clearance (Hot unless noted)	SPARK PLUG				
				°TC	Flywheel Teeth		Intake	Exhaust	Make	Type	Size
W-212	Her JXLD	6-4x4 $\frac{1}{2}$	35-1600	5°B		.012	.010	.010	CH	J-6	14mm
W-312	Her WXLCO-3	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	28-1600	2°A		.014	.012	.016	CH	J-10	14mm
W-1700	Her RXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	36-1600	2°A		.010	.010	.016	CH	0 COM	$\frac{1}{2}$ -18
W-700	Her RXCO	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	36-1600	2°A		.010	.010	.016	CH	0 COM	$\frac{1}{2}$ -18
W-703, W-705, W-703-6X6	Her RXLD	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	36-1600	2°A		.010	.010	.016	CH	0 COM	$\frac{1}{2}$ -18
W-703-D	Her DRXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	30-1200	12°B		.016	.016	.016	Diesel		.020
W-712	Her RXLDH	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$		2°A		.010	.010	.016	CH	6 COM	18mm
W-906R	Cum HRB600	6-5 $\frac{1}{2}$ x6		5°B		.014		.022	Diesel		
W-2200	Bud 6MO-779	6-5 $\frac{1}{2}$ x6	35-1800	20°B		.018	.015	.015	CH	8 COM	18mm
W-2201, W-1600-BG	Bud 6MO-893	6-5 $\frac{1}{2}$ x6	35-1800	20°B		.018	.015	.015	CH	8 COM	18mm
W-2204, W-1600-BD	Bud 6DC-844	6-5 $\frac{1}{2}$ x6	35-1800	20°B		.018	.015	.015	Diesel		
W-1600-CD, W-906	Cum HB-600	6-4 $\frac{1}{2}$ x6		5°B		.018	.015	.022	Diesel		
W-2205	Bud 6DCS-844	6-5 $\frac{1}{2}$ x6 $\frac{1}{2}$	30-1200	45°B		.010	.015	.015	Diesel		
W-2206	Cum HB-600	6-5 $\frac{1}{2}$ x7	55-1600	55°B		.021		.030	CH	A	18mm
W-2208	Hall-Scott 400	6-5 $\frac{1}{2}$ x7		20°B		.014	.027	Diesel			
W-2209	Cum NHB-600	6-5 $\frac{1}{2}$ x6						Diesel			
	NHRBS-600	6-5 $\frac{1}{2}$ x6						Diesel			

A—Two per cyl.; exhaust No. 6, intake No. 9.      B—.018-.022.

## VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Her WXLCO-3, RXC, RXCO, RXLD, RXLDH	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
Her DRXC	O. 48	1.449	27	1.844
I. 30	1.355	17	1.750	
Her JXLD	58	1.594	43	1.920
Cum HB-600, HRB-600	129-143	2	83-91	2 $\frac{1}{2}$
Cum NHB-600, NHBRS-600	104-114	1 $\frac{1}{2}$	74-82	2 $\frac{1}{4}$
Bud 6MO-779, 6MO-893, 6DC-844, 6DCS-844	144-155	2 $\frac{1}{2}$	62-68	2 $\frac{3}{4}$
Hall-Scott 400	O. 243	2.000	115	2.485
I. 243	1.941	115	2.423	

O—Outer. I—Inner.

## LUBRICATION

### ENGINE MODEL

ENGINE MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	
W-212, W-312	40 above 40°	30@10° to 40°	20 below 10°	140A	90A	140Hyp	90Hyp	140A	140A	C
W-1700, W-700, W-703, W-705, W-703-6X6, W-712	40 above 40°	30@10° to 40°	20 below 10°	140A	90A	140A	90A	140A	140A	C
W-703-D	40 above 60°	30@32° to 60°	20 below 32°	140A	90A	140A	90A	140A	140A	C
W-906, 906R, W-906-CD, W-2208, W-2209	30 above 80°	20@20° to 80°	10 below 20°	140A	90A	140A	90A	140A	140A	C
W-2200, W-2201, W-2204, W-2205, W-1600-BG, W-1600-BD, W-2206	40 above 90°	30@32° to 90°	20 below 32°	140A	90A	140A	90A	140A	140A	C
	30 above 32°	20 below 32°		140A	90A	140A	90A	140A	140A	C

A—Straight mineral oil gear lubricant; same for front axle, aux. trans & transfer case.

Hyp—Hypoid gear lubricant front and rear axles, W-212 & W-312 only.

C—Light weight chassis lubricant.

## CAPACITIES

### MODEL

	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
W-212	8	16	18	32
W-312	7	18a	21k	38
W-1700	10	24a	25b	48
W-700	10	24a	15c	48
W-703, W-705, W-703-D	13	24a	15c	48
W-712	13	24a	15c	48
W-906	18	22d	24e	40
W-906R	35	22d	24e	40
W-2200, W-2201	24	22d	24e	80
W-2204	24	22d	40f	80
W-2205	24	29g	40f	80
W-2206	16	29g	40f	75
W-2208	35	22d	40f	66
W-2209	35	29g	40f	66
W-703-6X6	13	24g	32h	48
W-1600 Series	24	22d	25c	84

a—Aux. trans. 6%.  
b—Front axle 24.  
c—Also front axle.  
d—Aux. trans. 17.  
e—Front axle 25.  
f—Front axle 36.  
g—Aux. trans. 12.  
h—Front axle 15.  
k—Front axle 11.

## BATTERY

### MODEL

	Amp. Mr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models	153	19	Pos
All Diesel Models	204	25	Pos

## FRONT END

### MODEL

	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
W-212, W-312, W-1700, W-700, W-703, W-705, W-703-D, W-703-6X6, W-712	0- $\frac{1}{8}$	1°	1°	3°
W-906, W-906R, W-1600, W-2200, W-2201, W-2204, W-2205, W-2206, W-2208, W-2209	0- $\frac{1}{8}$	$\frac{1}{2}$ °	1°	3°

## CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts	
E-19	8	6	9a	17½	
E-21	8	6	13b	20	
E-22	8	12	23d	20	
E-226	8	12	22e	20	
E-23	8	20	23f	28	
E-236	8	20	14g	28	
30, 31	14	15	30h	47	
316	14	15	32e	47	

a—Quantity shown is for single reduction spiral; with hypoid, 13 pt.; with two-speed, 15 pt.

b—Quantity shown is for single speed; two-speed, 15 pt.

c—Quantity shown is for single reduction; double reduction, 31 pt.

e—Each axle (tandem).

f—Quantity shown is for single speed; two-speed, 29 pt.

h—Quantity shown is for single speed; two-speed, 39 pt.

## MAINTENANCE DATA

# REO



## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
E-19, E-21, E-22, E-226	136	17	Pos
E-23, E-236	153	19	Pos
30, 31, 316	153*	19	Pos

\*—2 Batteries.

## TENSIONS

MODEL	Cylinder Head (pounds per square foot)	Main Bearings (pounds per square foot)	Connecting Rod Bearings (pounds per square foot)
E-19	83-100	67-75	70-75
E-21, E-22, E-226	100-105	85-90	65-70
See Continental, page 92			

## Series E-19, E-21, E-22, E-23, E-226, E-236, 30, 31, 316

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lbs. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Not unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC A-Before B-After	Spark Occurs Fly-Wheel Teeth °TC A-Before B-After	Comp. Pressure at Cranking Speed		
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size					
E-19	Ovw GC245	6-3½x4½	40	5°B		.012	.008	.010	CH	J11	14mm	.025	A	8°B	3B	105
E-21	Ovw OA292	6-3½x4½	45-50	5°B		.019	.015	.015	CH	J6	14mm	.025	A	4°B	120	
E-22	Ovw OA331	6-3½x4½	45-50	5°B		.019	.015	.015	CH	J6	14mm	.025	A	2°B	120	
E-23	Cont T6427	6-4½x4½	40-60	16°B		.022	.017	.017	CH	8COM	18mm	.030	A	6°B	110	
E-226	Ovw OA331	6-4½x4½	45-50	5°B		.019	.015	.015	CH	J6	14mm	.025	A	2°B	120	
E-236	Cont T6427	6-4½x4½	40-60	16°B		.022	.017	.017	CH	8COM	18mm	.030	A	6°B	110	
30	Cont R6513	6-4½x4½	40-60	12°B		.022	.020	.020	CH	8COM	18mm	.030	A	6°B	105	
31	Con R6602	6-4½x5½	40-60	12°B		.022	.020	.020	CH	8COM	18mm	.030	A	6°B	105	
316	Con R6602	6-4½x5½	40-60	12°B		.022	.020	.020	CH	8COM	18mm	.030	A	6°B	105	

A—.018 to .024.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
E-19	140	2 1/8	54	2 5/8
E-21, E-22, E-226	154	1 1/2	62	1 1/2
*—See Continental page 92.				

## FRONT END

MODEL	TOE-IN (In Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
E-19, E-21, E-22, E-226	1 1/4	1	2	8
E-23, E-236	1 1/4	1	2	8
30, 31, 316	1 1/4	1	2	8

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
E-19, E-21, E-22, E-226	30 above 32°	20W above 10°		10W below 10°	50HGL	50HGL	140	90	90	90
E-23, E-236, 30, 31, 316, E-236	30 above 50°	20 above 32°		10 below 20°	50HGL	50HGL	140	90	90	90

HGL—Heavy Gear Lubricant.

# STERLING



**Series DD, HBS, HC, HCS,  
HD, HDS, HWS**

If optional engine used, see pages 92 to 95.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance or Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs Flywheel Teeth °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth °TC		Intake	Exhaust	Make	Type	Size	Gap				
HD97, HD105, HA1401, HC97, HC105, HBS130, HDS140	Wau 6MZA	6-4½x4½	40-1500	8°B	3B	.008	.008-10C	.018-21C	AL	BT4	18mm	.025	.018	Var	.....	110
DD115, HD115, HD145, HC115, HC144, HC147, HC115, HWS160	Wau 6SRKR	6-4½x5½	40-1500	8°A	3A	.004	.008-10C	.024-26C	AL	TT8	18mm	.025	.018	Var	.....	90
HCS195, HA2205, HWS235G, DDS160, HC175, HC250, HWS235, DD145, HCS265, HCS297, HCS330H	Wau 140GK	6-4½x5½	40-1500	5°A	1½A	.010	.010-12C	.018-18C	AL	BT4	18mm	.025	.018	Var	.....	130
HD115H, DD145H, HD145H, HC115H, HC175H, HC250H, HWS160H, HWS235H, HCS195H, HCS265H, HCS297H, HCS330H	Wau 145GK	6-5½x6	40-1500	5°A	2A	.006	.009-11C	.024-26C	AL	BT4	18mm	.025	.018	Var	.....	130
Cum HB600	Cum HB600	6-4½x6	30-40-1800	5°B	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	525
NHBD600	NHBD600	6-5½x6	40-2100	20°B	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	525

## VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed		TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K.P. SLANT (In degrees)
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches				
6MZA	101	1½	64	2½	.....	.....	.....	.....
6SRKR	101	2½	66	2½	.....	.....	.....	.....
140GK	100	1½	31	2½	.....	.....	.....	.....
145GK	101	1½	26	1½	.....	.....	.....	.....
HB600	118	2½	48	2½	.....	.....	.....	.....
NHBD600	81	2½	32	2½	.....	.....	.....	.....
I—Inner. O—Outer.	129-143	2½	83-91	2½	.....	.....	.....	.....
	104-114	1½	74-82	2½	.....	.....	.....	.....

## LUBRICATION

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT	
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter		
HD97, HD105, HD115	40	50°-70°*	30	30°-50°	20W	Below 30°	140	90	140Hyp	90Hyp	140	90
DD115, HA1401, HD145, DD145	40	50°-70°*	30	30°-50°	20W	Below 30°	140	90	140	90	140	90
HD115H	20	20°-80***	10	Below 20°	.....	.....	140	90	140Hyp	90Hyp	140	90
DD145H, HC115H, HC250H, HWS235H	20	20°-80***	10	Below 20°	.....	.....	140	90	140	90	140	90
HD145H, HC115H, HWS160H, HCS195H	20	20°-80***	10	Below 20°	.....	.....	140	90	140	90	140	90
HC97, HC105, HC115, HC144, HC147, HC155, HBS130, HDS140, HWS160, DDS160, HA2205, HCS195, HC175, HC250, HWS235, HWS235G	40	50°-70°*	30	30°-50°	20W	Below 30°	140	90	140	90	140	90
HCS265, HCS297, HCS330, HCS268H, HCS297H, HCS330H, HCS340H	40	50°-70°*	30	30°-50°	20W	Below 30°	140	90	(SS)	(SS)	140EP	140EP
(SS)—Special Sterling Lubricant.	20	20°-80***	10	Below 20°	.....	.....	140	90	(SS)	(SS)	140EP	140EP
					Hyp—Hypoid gear lube.							
									*50 above 70°.			
										**30 above 80°.		

## CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
HD97	8	16	31	34*
HD105	8	16	30	34*
HA1401	8	16	16	34*
DD115	10	24a	16b	36*
HD115	10	24	38	36*
DD145	18	17g	16b	62*
HD145	10	24	24	36*
HD115H	20	17	38	56*
DD145H	20	17	16b	56*
HD145H	20	17	24	56*
HC97	8	16	12c	34*
HC105	8	16d	13c	34*
HC115, HC144, HC147, HC155, HWS160	10	24d	12c	36*
HC155, HC250, HC250H, HWS235H	10	24d	20c	36*
HC175, HC250H, HWS235H	18	17d	20c	62*
HC175H, HC250H, HWS160H	20	17e	20c	56*
HWS160H, HWS235H, HCS195H, HCS265H, HCS297H, HCS330H	8	16	22f	34*
HDS140	8	16	14f	34*
DDS160	10	24	14f	36*
HWS160	10	24	14f	56*
HA2205	10	24	32f	56*
HWS235G	18	17d	15h	62*
HCS195	10	24a	24c	56*
HCS265	18	17d	15h	62*
HCS297, HCS330	18	17d	15h	62*
HCS195H	20	17e	24c	56*
HCS265H	20	17d	15h	56*
HCS297H, HCS330H	20	17d	15h	56*
HCS340H	28	21e	19h	62*

\*—Varies with optional radiators.

a—Transfer Case—4 Pts. e—Jackshaft Oil Capacity.  
b—Capacity of Front Driv- d—Auxiliary Trans.—12 Pts.  
ing Axle—24 Pts. f—Auxiliary Trans.—17 Pts.

g—For Each Axle. h—Transfer Case—5 Pts. i—Pounds.

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K.P. SLANT (In degrees)
HD97, HD105, HC97, HA1401, HC105, HBS130, HDS140, HD115, HD145, HD115H, HD145H, HC115, HC144, HC147, HC155, HC155H, HWS160, HWS235H, HCS195, HCS195H, HA2205, DD145H, DDS160, DD145H, DD145H, HC175H, HC250H, HWS235G, HWS235G, HCS265H, HCS297H, HCS330H, HCS340H	1/4 ± 1/8	1	Var	8
	1/4 ± 1/8	0	Var	0
	1/4 ± 1/8	1	Var	8

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
2R5.....	5	2½a	3	10c
2R10.....	5	2½a	3	10c
2R15.....	6	6	6½	10c
2R16A.....	6	6	7b	15½d
2R17A.....	6½	18½b	15½d	

a—With overdrive - 3 pt.  
With 4-speed trans. - 6 pt.

c—13½ qt. optional  
d—16 qt. optional

b—With 2-speed axle 14 pt.

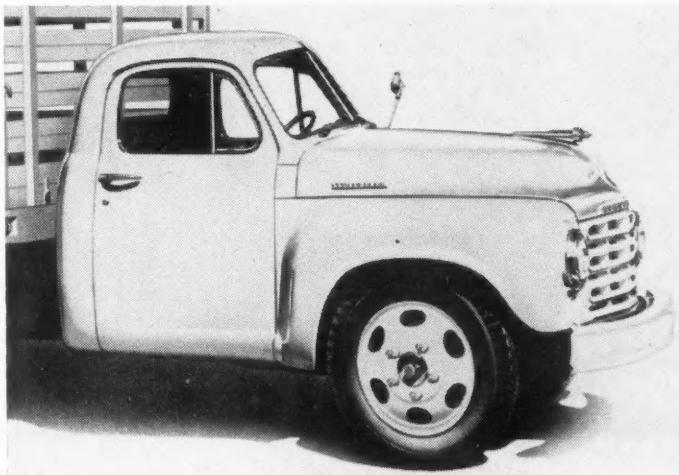
## MAINTENANCE DATA

# STUDEBAKER

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models*	100	15	Pos

\*—Optional battery 153-19 Pos.



## TENSIONS

ENGINE MODEL	Cylinder Head (pounds foot)	Main Bearings (pounds foot)	Connecting Rod Bearings (pounds foot)
2R5, 2R10, 2R15.....	48-50	88-93	28-32
2R16A, 2R17A.....	80-85	88-93	52-54

## Models 2R5, 2R10, 2R15, 2R16A, 2R17A

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC A-Before B-After	Spark Occurs Fly-Wheel Teeth °TC A-Before B-After	Comp. Pressure at Cranking Speed		
						°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap		
2R5, 2R10.....	Own 1R	6-3x4	40	15°B	.020	.016C	.016C	CH	J7	14mm	.025	.020	2°B	¾B	120
2R15.....	Own 2R	6-3x4	40	15°B	.020	.016C	.016C	CH	J7	14mm	.025	.020	2°B	¾B	120
2R16A, 2R17A.....	Own 4R	6-3½x4½	40	15°B	.020	.016C	.016C	CH	J7	14mm	.025	.022	2°B	¾B	120

C—Cold.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
2R5, 2R10, 2R15.....	93-103	1½	37-41	1½
2R16A, 2R17A.....	125-135	1½	54-60	2½

## FRONT END

MODEL	TOE-IN (In Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
2R5, 2R10.....	1½-1¾	1	1½-1¾	7½
2R15.....	1½-1¾	1	1½-2¼	8
2R16A, 2R17A.....	1½-1¾	1	2-2½	8

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
2R5.....	30 above 32°	20 at 10° to 32°	10 below 10°	90g	90g	90Hyp	90Hyp	J	J	K
2R10.....	30 above 32°	20 at 10° to 32°	10 below 10°	90g	90g	140	90Hyp	J	J	K
2R15.....	30 above 32°	20 at 10° to 32°	10 below 10°	140	90Hyp	140	90Hyp	J	J	K
2R16A (L).....	30 above 32°	20 at 10° to 32°	10 below 10°	140	90Hyp	140	90Hyp	J	J	K
2R17A (L).....	30 above 32°	20 at 10° to 32°	10 below 10°	140	90Hyp	140Hyp	90Hyp	J	J	K

g—If equipped with overdrive use 90 mineral gear lube or 40 engine oil.

J—Special lubes approved by Ross Tool & Gear Co.

h—Below 32° only.

K—Chassis lube—low pressure gun.

Hyp—Truck type hypoid lube.

L—2-speed rear axle (optional) 90 hyp. below 32° and 140 hyp. above 32°

# WALTER



## Models FGB, FGR, FC, FCK, FKM, FN, FZM

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs °TC Wheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaus	Make	Type	Size	Gap				
FN, FZM (1943-50)	Wau MZR	6-4 1/2 x 4 1/2	40-1500	8°A	3A	.004	.008-10C	.014-16C	Opt	.....	18mm	.025	.018	Var	.....	90
FKM, FCK, FC, FCR (1943-50)	Wau SRKR	8-7 1/2 x 5 1/2	40-1500	8°A	3A	.004	.008-10C	.014-16C	Opt	.....	18mm	.025	.018	Var	.....	90
FGB, FGR (1943-50)	Wau 145GK	6-5 1/4 x 6	40-1500	5°A	2A	.006	.008-11C	.024-26C	Opt	.....	18mm	.025	.018	Var	.....	130

C—Cold.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FN, FZM	101	1 1/2	64	2 1/2
FKM, FCK, FC, FCR	94	2 1/4	59	2 1/2
FGB, FGR	158 O. I.	2 1/4 2 1/2	67 42	2 1/2

I—Inner. O—Outer.

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
FN, FKM, FZM, FCK, FC, FGB, FGR (1936-50)	N/A	1 1/2	5	2

N—Negative.

## LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
All models (1936-50)	(S) 50	(W) 30	250	140	250	140	140	140	90

## CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
FGB, FGR (1943-50)	18	32	8	50
FC, FCK (1936-50)	10	25	7	42
FKM (1936-50)	10	17	5	38
FMB-FZM (1936-50)	8	17	5	32

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
FN, FZM (1943-50)	160	17	Pos
FC, FCK, FKM (12 Volts) (1943-50)	120	15	Pos
FGB, FGR (12 Volts) (1943-50)	160	17	Pos

## TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
FN, FZM	73- 75	98-100	67- 69
FKM, FCK, FC, FCR	73- 75	129-133	121-125
FGB, FGR	130-134	242-250	73- 75

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
D-1	8a	16c	31e	36
D-1C	8a	16	38	36
D-2K, D-2Z	10a	24c	38ef	61
D-3, D-3S	14b	24c	38ef	60
D-5	20	24d	38e	56
D-5N, D-5R, D-5S	28	24d	38e	56

f—Add 2 qts. for heater.  
 a—Add 1 qt. for filter.  
 b—Add 4 qts. for filter.  
 c—Models with tandem axles, aux. trans.—13 pts.  
 d—Models with tandem axles, aux. trans.—12 pts.  
 e—Other models ending in T2, T4, T7, T8, use 14, 17,  
 32, and 26 pts. in each axle respectively.  
 f—Other models ending in F, G, and H, use 38, 34 and  
 38 pts. in each axle respectively.

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models.....	152*	19	Pos
All Diesel Models.....	152**	19	Pos

\*—2 Batteries. \*\*—4 Batteries.

## TENSIONS

MODEL	Cylinder Head (pounds/feet)	Main Bearings (pounds/feet)	Connecting Rod Bearings (pounds/feet)
All Models.....	See Engines, Pages 92-95		

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap			
D1, D1C	Con T-6427	8-4½x4½	40-60	16°B	.....	.022	.017	.017	CH	.....	.....	.025	.....	.....	130
D2K, D2	Wau 140-GK	8-4½x5½	40-1500	5°A	.....	.010	.010	.0135	CH	.....	.....	.025	.018	TC	130
D2Z	Wau 140GZ	8-4½x5½	40-1500	5°A	.....	.010	.010	.0135	CH	.....	.....	.025	.020	5B	120
D3	Con R-8572	8-4½x5½	50-60	12°B	.....	.0245	.020	.020	CH	.....	.....	.025	.020	5B	120
D3S	Con R-8602	8-4½x5½	50-60	12°B	.....	.0245	.020	.020	CH	.....	.....	.025	.020	5B	120
D5	Cum HB600	6-5½x6	30-50	5°B	.....	.014	.022	.....	.....	.....	.....	.....	.....	.....	.....
D5N	Cum NHB-500	6-5½x6	30-50	20°B	.....	.014	.027	.....	.....	.....	.....	.....	.....	.....	.....
D5R	Cum HRB-800	6-5½x6	30-50	5°B	.....	.014	.022	.....	.....	.....	.....	.....	.....	.....	.....
D5S	Cum HBS-600	6-4½x6	77°B	.....	.....	.016	.028	.....	.....	.....	.....	.....	.....	.....	.....

## VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Con T-8427.....I.	57	1.458	12.8	1½
.....O.	129	71	35	2½
Con R8572, R8602.....I.	85	1½	70	2½
.....O.	165	1½	31	2½
Wau 140GK.....I.	55	2½	26	2½
.....O.	86	2½	31	2½
Wau 140GZ.....I.	55	1½	26	2½
.....O.	86	2½	31	2½
Cum HB600, HRB-600, HBS-600.....I.	129	2½	83	2½
.....O.	143	91	83	2½
Cum NHB600.....I.	104	1½	74	2½
.....O.	114	82	82	2½

I—Inner. O—Outer.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Gasoline Models.....	(S) 40 30 at 80°-100°	(W) 20 or 10 20 at 20°-80°	10 below 20°	140	90	140	90	140	140	.....
All Diesel Models.....				140	90	140	90	140	140	.....

## MAINTENANCE DATA

# WARD LaFRANCE



## Series D-1, D-1C, D-2K, D-2Z, D-3, D-3S, D-5, D5N, D5R, D5S

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
All Models.....	¾±½	¼-1½	½-1½	±

# WHITE



## Series WC14, WC16, WC18, WC20, WC22, WC26, WC28, WC32 & Models 3016, 3018, 3020, 3022, 3026

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size			
WC14	Own 110A	6-3½x4½	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	7°B
WC16, WC16B, 3016	Own 116A	6-3½x4½	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	7°B
WC16T, WC18, WC18B, 3016T, 3018	Own 120A	6-3½x4½	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	6°B
WC18T, WC20, WC20B, 3020, 3018T	Own 130A	6-4x4½	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	6°B
WC20T, WC22, 3020T, 3022	Own 140A	6-3½x5½	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	7°B
WC20ST, WC22T, WC26, WC26T, 3022T, 3026, WC2264, WC22PLT, 3022PLT	Own 150A	6-4x5½	35 Max	15°B	.....	0	0	0	Ch	J6	14mm	.025	D	3°B
WC28	Own 160A	6-4x5	45 Max	15°B	.....	0	0	0	Ch	6 COM	18mm	.025	D	9°B
WC28T, WC32, WC2864, WC3264	Own 180A	6-4x5	45 Max	15°B	.....	0	0	0	Ch	6 COM	18mm	.025	D	9°B

D—.017 to .018. E—.018 to .024.

### VALVE SPRINGS

ENGINE MODEL	VALVE SPRINGS				TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
	Valve Open		Valve Closed					
ENGINE MODEL	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches				
110A, 116A, 120A, 130A, 140A, 150A, 260A, 280A	99-107 74-81 109-117	2½ 1.827 1.827	Free Free Free	3.0 25½ 21½				

O—Outer. I—Inner.

### LUBRICATION

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter	
WC14, WC16, WC16B, WC16T, 3016, 3016T, All other Models	(S)30 (S)30 (S)—Summer.	(W)20 (W)20 (W)—Winter.			90 90	90 90	140EP 140	90EP 90			
Note: EP—Extreme pressure lubricant.											

### CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Trans-Mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
WC14	12	2	16	32
WC16-16B	12	6	22	30
WC16T	12	13	22	30
WC18-18B	12	13	11	30
WC18T, WC20, WC20B, WC20ST, WC20T, WC22, WC22T, 26, 26T	12	13	11	30
WC22, WC22PLT	12	16	8	30
WC28, WC28T, WC32	15	24	22	38
WC2264	12	16	22 EA	30
WC2864	15	24	14 EA	38
WC3264	15	24	26 EA	38
3016	10	6	22	28
3016T	10	13	22	28
3018	10	11	28	28
3018T, 3020, 3020T	10	13	11	28
3022, 3022T, 3026	10	16	22	29
3022PLT	10	16	8	29

### BATTERY

MODEL	Amp.-Hr. Capacity			
	Number of Plates	Terminal Grounded		
WC14, WC16, WC16T, WC18, WC18T, WC20, WC20B, WC20T, WC22, WC22T, WC22PLT, WC26, WC26T, WC28, WC28T, WC2864, WC2864T, WC32, WC3264, WC3264T	119	15	Pos	
WC16B, WC16T, WC18B, WC18T, WC20B, WC20T, 3022T, 3026T	136	17	Pos	
WC28, WC32, WC2864, WC3264	119*	15	Pos	
WC28T	136*	17	Pos	

\*—2 Batteries.

### TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)	SPARK PLUG				Breaker Point Gap
				Intake	Exhaust	Make	Type	
110A, 116A, 120A,	85-90	85-90	85-90	70-75	70-75	70-75	70-75	40-65
130A, 140A	85-90	85-90	85-90	70-75	70-75	70-75	70-75	48-52
150A	105-110	105-110	105-110	70-75	70-75	70-75	70-75	70-75

### FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
WC14, WC16, WC16T, WC18, WC18B, WC18T, WC20, WC20B, WC20T, WC20ST, WC16B, WC22PLT, WC22, WC22T, WC26, WC26T, WC28, WC28T, WC32, WC3264, WC3264T, 3016, 3016T, 3018, 3020, 3020T, 3022, 3022T, 3026, 3026T, 3022PLT, 3026PLT	⅛	1°	2°-50"	8°
3018T, 3020, 3020T, 3022, 3022T, 3026, 3026T, 3022PLT, 3026PLT	⅛	1°	2°-50"	8°30"
3022PLT, 3026PLT	⅛	1°	2°-30"	6°

# CROSLEY

## MAINTENANCE DATA

# WILLYS



Pick Up, Panel Delivery



Models CJ-3A, 4WD, 473 Series

## BATTERY

MODEL	AMP. Hr. Capacity	Number of Plates	Terminal Grounded
WILLYS All Models.....	100	15	Neg
CROSLEY All Models.....	70	11	Pos

## TENSIONS

MODEL	Cylinder Head (pounds- feet)	Main Bearings (pounds- feet)	Connecting Rod Bearings (pounds- feet)
WILLYS All Models.....	60-65	65-70	35-40
CROSLEY All Models.....	None	12.5-15	16.5-23

## CAPACITIES

MODEL	ENGINE Quarts	TRANSMISSION Pints	REAR AXLE PINTS	COOLING SYSTEM CAPACITY Quarts
WILLYS CJ-3A.....	4	3*	2 $\frac{1}{2}$ **	11
4WD.....	4	3*	3**	11
473 Series.....	4	1 $\frac{1}{4}$	2	11
CROSLEY All Models.....	2	1	1 $\frac{1}{2}$	4

\*—Transfer case, 2 $\frac{1}{2}$  pts.

\*\*—Front axle, 2 $\frac{1}{2}$  pts.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs TC A-Before	Spark Occurs Fly- Wheel Teeth TC B-Before	A-After	Combo. Pressure at Cranking Speed
							Intake	Exhaust	Make	Type	Size	Gap					
WILLYS CJ-3A.....	Own L	4-3 $\frac{1}{2}$ x 4 $\frac{1}{2}$	35-30	9°B	2.4B	.020	.016C	.016C	AL*	AN-7*	14mm	.030	.020	5*B TC	1.3B TC	115	
4WD, 473 series.....	Own F	4-3 $\frac{1}{2}$ x 4 $\frac{1}{2}$	35-30	9°B	2.4B	.026	.018C	.016C	AL*	AN-7*	14mm	.030	.020	5*B TC	1.3B TC	120	
CROSLEY All Models.....	Own	4-2 $\frac{1}{2}$ x 2 $\frac{1}{4}$	40-30	5°B	1	.006	.004-6C	.007-9C	AL	AN-7E	14mm	.025	.020	12B	3B	130	

\*—OR Champion J-9.

C—Cold.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
WILLYS CJ-3A intake, all exhaust.....	116	1 $\frac{3}{4}$	50	2 $\frac{7}{8}$
4WD, 473 Series Intake.....	160	1 $\frac{3}{8}$	73	1 $\frac{1}{2}$
CROSLEY All Models—Intake.....	51 max.	1 $\frac{7}{8}$	30 max.	1 $\frac{1}{2}$

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	
WILLYS All Models.....	30 above 90°	20@32° to 90°	20W@10° to 32°*	90A	80A	90B	90B	140	140	C
CROSLEY All Models.....	30 above 65°	20@10° to 65°	10 under 10°	90	90	90	90	90	90	.....

\*—10W @ -10° to 10°, 10% kerosene below -10°

A—Same for transfer case or overdrive.

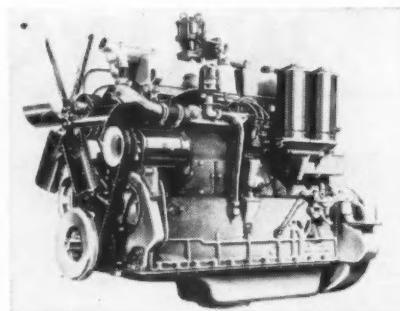
B—Same for front axles on 4WD models.

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
WILLYS CJ-3A, 4WD.....	3 $\frac{1}{2}$	1 $\frac{1}{2}$	3	7 $\frac{1}{2}$
473 Panel.....	3 $\frac{1}{2}$	1 $\frac{1}{2}$ -1 $\frac{1}{4}$	1	5
473 HT CROSLEY All Models.....	3 $\frac{1}{2}$	4 $\frac{1}{4}$	2	7 $\frac{1}{2}$

C—Front axle shaft U-joint: fibre grease or NLGI #0 winter, NLGI #1 summer. Propeller shaft U-joint: NLGI #0 winter, NLGI #1 summer. Rear prop. shaft on 4WD lubricated for life.

# CONTINENTAL



Series F, M, B, T, R, U, S, TD, RD

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC A-After	Spark Occurs Fly-Wheel Teeth °TC A-After	Conn. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
F6186			6-3x4½	35-40	TC		.014	.014A			18mm	.025				115
F6209			6-3½x4½	35-40	TC		.014	.014			18mm	.025				115
F6226			6-3½x4½	30-40	TC		.014	.014			18mm	.025				115
M6271			6-3½x4½	40-50	6½°B		.017	.020			18mm	.025				115
M6290			6-3½x4½	40-50	6½°B		.017	.020			18mm	.025				115
M6330			6-4x4½	40-50	6½°B		.017	.020			18mm	.025				115
B6371			6-4x4½	40-50	6½°B		.017	.020			18mm	.025				115
T6371			6-4½x4½	40-60	6½°B		.017	.022			18mm	.025				115
B6427			6-4½x4½	40-50	6½°B		.017	.022			18mm	.025				115
T6427			6-4½x4½	40-60	16°B		.017	.022			18mm	.025				115
U6501			6-4½x5½	40-50	17°B		.020	.024			18mm	.025				120
R6513			6-4½x5½	50-60	12°B		.020	.024			18mm	.025				120
R6572			6-4½x5½	50-60	12°B		.020	.024			18mm	.025				120
R6602			6-4½x5½	50-60	12°B		.020	.024			18mm	.025				120
S6749			6-5½x5½	40-60	17°B		.020	.024			18mm	.025				120
TD6427			6-4½x4½	40-60	12°B		.017	.017			Die sel					
RD6572			6-5½x5½	40-60	12°B		.020	.020			Die sel					

A—With Roto Valve, .010; B—With Roto Valve, .016; D—With Roto Valve, .018.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
AA-800	108-118	2	66-72	2½
HB-400, HB-600, HBS-600, HRB-600, HRBS-600	129-143	2½	83-91	2½
NHB-600, NHBS-600, NHRBS-600, NVH-1200, NVHS-1200	104-114	1½	74-82	2¼

## TENSIONS

Engine	Part	Step 1	Step 2	Step 3	Step 4
		Initial Tighten	Release Tension	"Snug" Tighten	Final Tighten
AA-600	Main Bearings	160 lb-ft	Loosen Completely	30 lb-ft	60 deg
HB, HBS, HRB, HRBS	Connecting Rod Bearings			40-45 lb-ft	
HB, HBS, HRB, HRBS	Main Bearings	320 lb-ft	Loosen Completely	50 lb-ft	50 deg
NHB, NHBS, NHRBS	Connecting Rod Bearings	140 lb-ft	Loosen Completely	40 lb-ft	60 deg
NVH, NVHS	Main Bearings	350 lb-ft	Loosen Completely	50 lb-ft	60 deg
	Connecting Rod Bearings			140 lb-ft	

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC A-After	Spark Occurs Fly-Wheel Teeth °TC A-After	Conn. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
AA-600		6-4x5		6°B			.015	.025			Diesel					525
HB-400		4-4½x6		5°B			.014	.022			Diesel					525
HB-600		6-4½x6		5°B			.014	.022			Diesel					525
HBS-600		6-4½x6		77°B			.016	.028			Diesel					525
HRB-600		6-5½x6		5°B			.014	.022			Diesel					525
HRBS-600		6-5½x6		77°B			.016	.028			Diesel					525
NHB-600		6-5½x6		20°B			.014	.027			Diesel					525
NHBS-600		6-5½x6		77°B			.014	.021			Diesel					525
NHRBS-600		6-5½x6		55°B			.014	.021			Diesel					525
NVH-1200		12-6½x6		20°B			.014	.027			Diesel					525
NCHS-1200		12-5½x6		77°B			.014	.027			Diesel					525

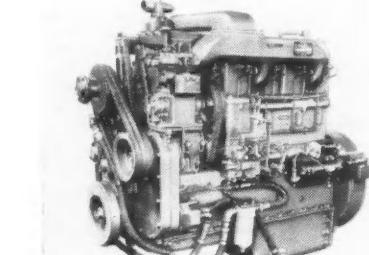
## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
B6371, B6427	O. I.	102-110 28-32	1.521	53-59 11.3-14.3
F6186, F6226		101	42.5-47.5	11½
F6186, F6209		98-104	1.521	42.5-47.5
M6271, MG290, M6330		111-118	53-59	11½
R6513, R6572, R6602, RD6572	O. I.	160-170 82-88	1.521	67-73 33-37
T6371, T6427, TD6427	O. I.	129 57	1.458	71 12.8
S6749	O. I.	200 100	2.1	90 45

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	35-40	20-25	
	70-75	35-40	
	90-100	70-75	
	130-140	85-95	
	145-155	100-110	

# CUMMINS



4, 6 and 12 Cylinder Series

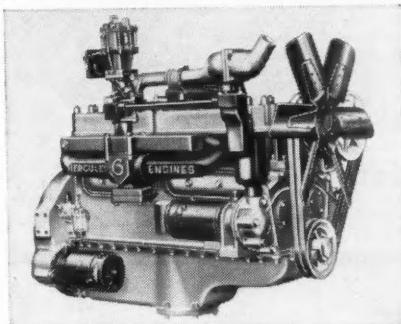
## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
ZX Series.....	35	77	25
IX Series.....	33	77	42
JX Series.....	75	*60	52
QX Series.....	60	*60	39
TDXB.....	70	*105	115
DWXLD Series.....	158	175	158
DFXH-F.....	350	260	263
WX Series.....	60	*70	105
YX, RX Series.....	75	*105	115
RXL Series.....	80	*123	115
HX Series.....	105	*193	123
D1X6, D1X4D.....	158	*210	263
DOO Series.....	158	*77	140
DWX Series.....	158	*95	158
DJX Series.....	158	*77	140
DRX Series.....	56"-175	175	158
DFX Series.....	300	*280	263

\*—Center and rear.  
†—Connecting rod  $\frac{1}{8}$  in.  
‡—Connecting rod  $\frac{1}{16}$  in.  
\*\*—Front and intermediate.  
†—Babbitt.  
a—Front, center and rear.  
b—Intermediate.

## MAINTENANCE DATA

# HERCULES



## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
ZX Series.....	35	1 $\frac{1}{2}$	22	1 $\frac{1}{2}$
IX Series.....	42	1 $\frac{1}{2}$	21	1 $\frac{1}{2}$
OO, JX Series.....	58	1.594	43	1.920
QX Series.....	37-41	1 $\frac{1}{2}$	17-19	1 $\frac{1}{2}$
TDX, OX, WX, WXL, YX, RX, RXL Series.....	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
HX Series.....	O.	84	3 $\frac{1}{2}$	47
I.	I.	45	2 $\frac{1}{2}$	34
DIX6D, DIX4D.....	O.	49	1.2125	26
I.	I.	34	1.0875	16
DOO, DJX Series.....	O.	55	1.406	31
I.	I.	37	1.281	19
DWXL, DWX Series.....	O.	84	1 $\frac{1}{2}$	38
I.	I.	74	1 $\frac{1}{2}$	28
DRX Series.....	O.	48	1.449	27
I.	I.	30	1.355	17
DFX Series (Except DFXH).....	O.	94	2 $\frac{1}{2}$	55
I.	I.	57	2 $\frac{1}{2}$	32
DFXH.....	O.	124	1 $\frac{1}{2}$	63
I.	I.	96	1 $\frac{1}{2}$	42

I—Inner. O—Outer.

## Series ZX, IX, QX, JX, WX, YX, RX, HX and Diesels

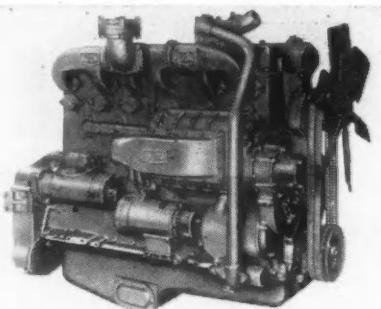
## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed	
				*TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap			
IX Series.....			15-1000	5°A	Var	.006	.006	.008	Opt		.025	.020	N	N	Opt
JXA, JXF, JX6, JXE3, JXB, JX6, JXD.....			26-1600	5°B	Var	.010	.008	.010	Opt		.025	.020	N	N	Opt
QXA, QXB, QXC, QXD.....			26-1600	5°B	Var	.006	.006	.008	Opt		.025	.020	N	N	Opt
WX Series.....			26-1600	2°A	Var	.010	.006	.010	Opt		.025	.020	N	N	Opt
ZX Series.....			15-1000	5°A	Var	.006	.006	.006	Opt		.025	.020	N	N	Opt
QXLD.....			26-1600	5°B	Var	.006	.008	.010	Opt		.025	.020	N	N	Opt
JX4-E.....		6-3 $\frac{1}{2}$ x 4 $\frac{1}{2}$	32-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
JX4-C.....		4-3 $\frac{1}{2}$ x 4 $\frac{1}{2}$	32-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
JX4-D.....		4-4x4 $\frac{1}{2}$	32-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
JX4-L.....		6-4x4 $\frac{1}{2}$	35-1600	5°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
RXB.....		6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	26-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXC.....		6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
TDXB.....		6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	36-1600	5°B	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXL.....		6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
RXLH.....		6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	36-1600	2°A	Var	.010	.010	.016	Opt		.025	.020	N	N	Opt
HXB.....		6-5x6	36-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
HXC.....		6-5 $\frac{1}{2}$ x6	35-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
HXD.....		6-5 $\frac{1}{2}$ x6	35-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
HXE.....		6-5 $\frac{1}{2}$ x6	35-1600	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
DJXB.....		6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	45-2000	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DIX4D.....		4-3 $\frac{1}{2}$ x4	45-2000	17 $\frac{1}{2}$ B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DIX6D.....		6-3 $\frac{1}{2}$ x4	45-2000	17 $\frac{1}{2}$ B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DJXC.....		6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	45-2000	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DJXH.....		6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	45-2000	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DJXH-F.....		6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	45-2000	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DOOB.....		4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	30-1200	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DOOC.....		4-4x4 $\frac{1}{2}$	30-1200	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DOOD.....		4-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	30-1200	12°B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DWXLD.....		6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	40-1600	17 $\frac{1}{2}$ B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DWXLD-F.....		6-4 $\frac{1}{2}$ x5	40-1600	17 $\frac{1}{2}$ B	Var	.010	.010	.010	Opt		.025	.020	N	N	Opt
DRXB.....		6-4 $\frac{1}{2}$ x5	30-1200	12°B	Var	.016	.016	.016	Opt		.025	.020	N	N	Opt
DRXC.....		6-4 $\frac{1}{2}$ x5 $\frac{1}{4}$	30-1200	12°B	Var	.016	.016	.016	Opt		.025	.020	N	N	Opt
DFXB.....		6-5x6	50-1200	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
DFXC.....		6-5 $\frac{1}{2}$ x6	50-1200	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
DFXD.....		6-5 $\frac{1}{2}$ x6	50-1200	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
DFXE.....		6-5 $\frac{1}{2}$ x6	50-1200	5°B	Var	.015	.010	.016	Opt		.025	.020	N	N	Opt
DFXH.....		6-5 $\frac{1}{2}$ x6	50-1200	5°B	Var	.014	.010	.016	Opt		.025	.020	N	N	Opt
DFXH-F.....		6-5 $\frac{1}{2}$ x6	50-1200	19°B	Var	.014	.010	.016	Opt		.025	.020	N	N	Opt

F—Horizontal type engine.

N—Varies with compression ratio.

# BUDA



**Series 6B, HP, K, L, LO, 6MO,  
6BD, 6DT, 6DC, 8DC**

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve		Operating Tapet Clearance (Hot unless noted)	SPARK PLUG			Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly Wheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap		
6B-230		6-3 1/2 x 4 1/2	35-1600	10°B		.008	.009	.009	CH		14mm	.030	.018	
6B-273		6-3 1/2 x 4 1/2	35-1600	10°B		.008	.009	.009	CH		14mm	.030	.018	
HP326		6-3 1/2 x 4 1/2	40-1400	TC		.006	.006	.009	CH	15A	18mm	.030	.018	103
HP351		6-3 1/2 x 4 1/2	40-1400	TC		.006	.006	.009	CH	15A	18mm	.030	.018	103
K428		6-4 1/2 x 4 1/2	40-1400	TC		.006	.006	.009	CH	15A	18mm	.025	.018	102
L525		6-4 1/2 x 5 1/2	40-1600	TC		.006	.006	.009	CH	15A	18mm	.025	.018	87
LO525		6-4 1/2 x 5 1/2	40-1500	10°B		.009	.009	.018	CH	J10	18mm	.025	.018	93
6MO-770		6-5 1/2 x 6	35-1800	20°B		.015	.015	.015	CH	6COM	18mm	.027	.018	125
6MO893		6-5 1/2 x 6	30-1200	10°B		.010	.015	.015	CH	6COM	18mm	.027	.018	105
6MO970		6-5 1/2 x 6 1/2	35-1800	20°B		.016	.015	.015	CH	6COM	18mm	.027	.018	125
6BD-230		6-3 1/2 x 4 1/2	35-1600	20°B		.008	.009	.009		Die sel				
6BD-273		6-3 1/2 x 4 1/2	20-1800	20°B		.008	.009	.009		Die sel				390
6DT-317		6-3 1/2 x 5 1/2	40-1600	12°B		.009	.009	.012		Die sel				
6DT-488		6-4 1/2 x 5 1/2	35-1800	12°B		.009	.009	.012		Die sel				
6DC844		6-5 1/2 x 6	30-1200	20°B		.010	.015	.015		Die sel				
6DCS-844		6-5 1/2 x 6 1/2	30-1200	45°B		.010	.015	.015		Die sel				
6DCS-1125		6-5 1/2 x 6 1/2	30-1200	45°B		.010	.015	.015		Die sel				
8DC-1125		8-5 1/2 x 6 1/2	30-1200	20°B		.010	.015	.015		Die sel				

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
190GL	71	1 1/2	48	1 1/2
195GKA	124±10	1 1/2	48±4	2 1/2
6BZ	110	1 1/2	61	2 1/2
6MZA	101	1 1/2	64	2 1/2
140GK	O. 116	1 1/2	31	2 1/2
I. 55	1 1/2	26	1 1/2	
140GKB, 140GZB (Hi Output)	O. 127	1 1/2	67	2 1/2
I. 70	1 1/2	30	1 1/2	
6SRKR	101	2 1/2	66	2 1/2
145GK, 145GZ	O. 118	2 1/2	48	2 1/2
I. 81	2 1/2	32	2 1/2	
145GKB (Hi Output)	O. 158	2 1/2	67	2 1/2
I. 100	2 1/2	42	2 1/2	
190DLC	71±8	1 1/2	48±4	1 1/2
148DK	O. 118±9	2 1/2	48±4	2 1/2
I. 81±6	2 1/2	32±3	2 1/2	
6WAKD	O. 140±10	2 1/2	50±3	3 1/2
I. 139±11	2 1/2	56±4	3 1/2	

I—Inner. O—Outer.

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)	
			Intake	Exhaust
190GL	81-83	109-113	46	
6BZ	73-75	88-92	67-69	
6MZA, 195GKA	73-75	96-100	67-69	
140GK, 140GKB, 140GZB	129-133	129-133	121-125	
6SRKR	73-75	129-133	121-125	
145GK, 145GKB, 145GZ	L200	242-250	73-75	
S175				
6WAK, 6WAKH	148-150	242-250	86-88	
190DLC	96-100	108-112	45-50	
148DK	L240-250	240-250	85-89	
S170-190				
6WAKD	L240-250	240-250	90-95	
S170-190				

L—Long. S—Short.

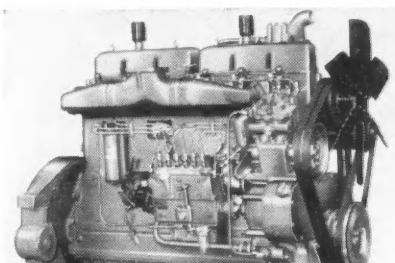
## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
K-428 (1938-50)	125-138	1 1/2	51-57	2 1/4
LO-525 (1938-50)	128-136	2 1/2	42-49	3 1/4
6MO-770, (1946-50)	145-155	2 1/2	62-68	2 1/4
6MO-893, 6MO-970 (1946-50)	145-155	2 1/2	62-68	2 1/4
6BD-273 (1946-50)	105-115	1 1/2	40-50	1 1/4
6DT-317 (1938-50)	84-89	1 1/2	35-40	2 1/4
6DT-488 (1938-50)	78-86	1 1/2	35-38	2 1/4
6DC-844 (1944-50)	144-155	2 1/2	62-68	2 1/4
6DCS-844 (1945-50)	144-155	2 1/2	62-68	2 1/4
8DC-1125, 8DCS-1125 (1945-50)	162-172	2 1/2	70-80	2 1/4

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)	
			Intake	Exhaust
All Models	3 1/2"- 60- 70	1 1/2"-195-200		
	7 1/2"- 75- 85	1 1/2"-210-230		
	7 1/2"- 95-105	1 1/2"-230-250		
	7 1/2"-125-135	1 1/2"-245-275		
	7 1/2"-150-160	1 1/2"-285-315		
		1 1/2"-325-350		

# WAUKESHA



**Models 190GL, 195GKA, 6BZ, 6MZA, 6SRKR; 140, 145, 6WA Series and Diesels**

## WAUKESHA—continued

### MAINTENANCE DATA

#### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	°TC	Intake Valve Opens B-Before A-After	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at 4 Cranking Speed
							Intake	Exhaust	Make	Type	Size	Gap			
190GL		6-3½x4	12-15*	8°F	3B	.010	.010-12C	.014-16C	Opt		18mm	.025	.018	Var	Var
6BZ		6-4x4½	40-1500	8°F		.010	.010C	.014C	Opt		18mm	.025	.010	Var	112
195GKA		6-4½x4	40*	18°F		.010	.012-14C	.018-20C	Opt		18mm	.025	.018	Var	110
6MZA		6-4½x4½	40-1500	8°F	3B	.008	.008-10C	.018-21C	Opt		18mm	.025	.018	Var	110
140GK		6-4½x5½	40*	15°F	5B		.012-14C	.024-26C	Opt		14 or 18	.025	.018	Var	Var
140GKB (Hi Output)		6-4½x5½	40*	15°F	5B		.012-14C	.024-26C	Opt		14 or 18	.025	.018	Var	90
6SRKR		6-4½x5½	40-1500	8°F	3A	.004	.008-10C	.024-28C	Opt		14 or 18	.025	.018	Var	Var
140GZB (Hi Output)		6-4½x5½	40*	15°F	5B		.012-14C	.024-26C	Opt		14 or 18	.025	.018	Var	Var
145GK, 145GKB (Hi Output)		6-5½x6	40*	15°F	6B		.012-14C	.023-25C	Opt		14 or 18	.025	.018	Var	Var
145GZ		6-5½x6	40*	15°F	6B		.015-17C	.021-23C	Opt		14 or 18	.025	.018	Var	Var
6WAK, 6WAKH		6-6½x6½	40-1500	TC	TC	.012	.018-20C	.025-27C	Opt		18mm	.025	.018	Var	85†
190DLC		6-3½x4	15-1500	8°F		.010	.009-11C	.015-17C			Die sel				
148DK		6-5½x6	40-1500	10°F			.014-16C	.022-24C			Die sel				
6WAKD		6-6½x6½	40-1300	TC	TC	.012	.013-15C	.023-25C			Die sel				450

\*At governed speeds.

C—Cold.

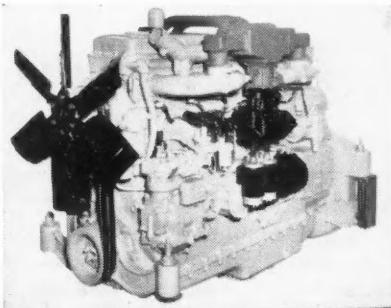
†6WAKH, 125 lb.

#### VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models	0. { 243 I. { 243	2.000 1.941	115	2.485 2.423

—Inner. O—Outer.

## HALL-SCOTT



#### TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	L230-250 S30-40	180-200	130-140

L—Large. S—Small.

#### Models 400, 470, 480, 180,

#### 190, 136, and 504

#### TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	°TC	Intake Valve Opens B-Before A-After	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG			Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
							Intake	Exhaust	Make	Type	Size	Gap			
470 Truck		6-5½x6	55-1600	10°F			.021	.031	CH	Note 1	18mm	.018	Note 2	2°F	129
480 Truck		6-5½x6	55-1600	10°F			.021	.031	CH	Note 1	18mm	.018	Note 2	2°F	129
400 Truck		6-5½x7	55-1600	10°F			.021	.031	CH	Note 1	18mm	.018	Note 2	2°F	129
180 Bus*		6-5½x6	60-2000	7°F			.021	.021	CH	Note 3	18mm	A	B	12°F	116
190 Bus*		6-5½x6	60-2000	7°F			.021	.021	CH	Note 3	18mm	A	B	12°F	114
136 Bus*		6-4½x5	55-2600	4°F			.023	.023	CH	No. 6	18mm	.018	B	TC	150
504 Bus*		6-4½x5	55-2600	10°F			.025	.025	CH	No. 6	18mm	.018	B	9°F	120

Note 1—Two per cyl. All exhaust, No. 6. Intake (Butane), No. 8.

Note 3—2 per cyl., all No. 6.

Intake (Gasoline), No. 9. Note 2—Delco-Remy single and both Auto-Lite, .020. Delco-Remy dual, .015. A—.018 intake side, .020 exhaust side. B—.018-.024. \*—Horizontal in line.

# ACF-BRILL



## Models C-27, C-31, C-36, C-44, C-48, IC-37/41

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size
C-36	HS 136-477	6-4½x6	60-2400	4°B	½"	.025	.025c	.025c	CH	6 COM	18mm
C-44	HS 180-3	6-5x6	80-2200	7°B	1"	.022	.022c	.022c	CH	6 COM	18mm
C-44, C-48, IC 37/41	HS 190-3	6-5½x6	80-2200	7°B	1"	.022	.022c	.025c	CH	6 COM	18mm
C-27	IHC 361	6-4½x4½	40-45 @ 1500/1800	8°B	...	.023	.020	.020	CH	J-10	14mm
C-31	IHC 401	6-4½x5	40-45 @ 1500/1800	8°B	...	.023	.020	.020	CH	J-10	14mm
C-31	IHC 450	6-4½x5	40-45 @ 1500/1800	8°B	...	.023	.020	.020	CH	J-10	14mm
HS—Hall-Scott.	*	100-105	C—Cold								

## VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
C-44 (HS 180-3).....	243	2.000	115	2.485
C-36 (HS 136, 477).....	243	1.941	115	2.423
C-44, C-48, IC 37/41 (HS 190-3).....	0			
C-27 (IHC 361).....				
C-31 (IHC 401, 450).....				

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
C-36, C-44 (HS 180-3, 190-3), C-48, IC-37/41, C-27, C-31.....	a 32° to 90° b 32° to 90°	20 @ 32° to -10° 20 @ 32° to 10°		140	140	140	140	90	90	90

a—SAE 30 light service, SAE 40 heavy service.

b—SAE 40 light service, SAE 50 heavy service.

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmision Pints	Rear Axle Pints	Cooling System Capacity, Quarts
C-36.....	16	9	21	56
C-44 (HS 180-3, HS 190-3), IC-37/41.....	20	20	26	80
C-27, C-31.....	12	8	13	32
C-36*	16	7½	21	80
C-44*, C-48.....	20	14	26	80

\*—Torque converter.

## BATTERY

MODEL	TERMINAL GROUNDED		
	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models.....	158	17	Pes

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	CONNECTING ROD BEARINGS (pounds-feet)	
			30-40	130-140
HS 136/477-2.....	30-40	120-130	130-140	70-80
HS 180-3, 190-3.....	30-40	210-220	180-200	130-140
IHC Red 361, 401, 450.....	105	105	105	80

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
C-36.....	0-1/16	1	1 1/2	8
C-44, C-48, IC 37/41.....	0-1/16	1	1 1/2	8
C-27, C-31.....	0-1/16	1	1 1/2	8

# AEROCOACH



Models 372-MC, MH, MD, T361

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
AEROCOACH 372-MC, 372-MH	165	21	Pos
372-MD*	165	21	Pos
T-361	158	17	Pos
BEAVER All Models	158	17	Pos
*—2 Batteries			

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
AEROCOACH 372-MC, T-361	110		
372-MD	5/8"-175 1"-280	175	158
BEAVER IHC 450, 406, 372	110	105	80
IHC 269	80	105	80

Models B35PT, B31PT, B27PT

## CAPACITIES

MODEL	Engine Quarts	Trans- mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
AEROCOACH 372-MC	12	10	12	80
372-MH	9	10	12	80
372-MD	14	10	12	80
T-361	12	7	.....	80
BEAVER IHC 450	12	6	23	60
IHC 406, 372	12	6	20	60
IHC 269	8	6	20	50

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap B-Before	Spark Occurs Fly- Wheel Teeth °TC B-Before	Spark Occurs Fly- Wheel Teeth °TC A-After	Conn. Pressure at Cranking Speed		
				TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
AEROCOACH 372-MC, T-361	Con U6501	6-4 1/2x5 1/4	40-50	17°B	.....	.0225	.020	.024	AC	82	18mm	.025	.021	5°B TC	.....	120
372-MH	IHC 450	6-4 1/2x5	40-1500	8°B	.....	.023	.018	.020	AC	43	14mm	.030	.021	.....	122	.....
372-MD	Her DRXC	6-4 1/2x5 1/4	30-1200	12°B	.....	.016	.016	.016	.....	.....	.....	.....	.....	.....	.....	.....
BEAVER B35PT	IHC 450	6-4 1/2x5	40-2600	8°	.....	.023	F	F	AC	43	14mm	E	D	TC	.....	122
B31PT	IHC 372	6-4 1/2x4 1/2	40-2700	8°	.....	.023	F	F	AC	43	14mm	E	D	TC	.....	122
B31PT	IHC 401	6-4 1/2x4 1/2	40-2700	8°	.....	.023	F	F	AC	43	14mm	E	D	TC	.....	122
B27PT	IHC 269	6-3 1/2x4 1/2	40-2800	8°	.....	.023	F	F	AC	43	14mm	E	D	3°B TC	.....	115

F—.018-.020.

E—.028-.032.

D—.018-.024.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
AEROCOACH All Models			See engine page	93
BEAVER B35PT, B31PT B27PT	222 116		92 69	.....

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
AEROCOACH 372-MC, 372-MH, 372-MD T-361	1/8 1/8	1° 1°	1 1/2° 1°	8° 8°
BEAVER All Models	1/2	1°	0 to 2°	8 1/2°

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
AEROCOACH 372-MC	(S)40	(W)30		50	50	140	90	250	140	140
372-MH	(S)50	(W)40		50	50	140	90	250	140	140
372-MD		Follow Visco meter		50	50	140 Hyp	90 Hyp	250	140	140
T-361	(S)40	(W)30		50	50	140 Hyp	90 Hyp	250	140	140
BEAVER B35PT, B31PT B27PT	(S)50 S(40)	(W)40 (W)30		140	90	140GP	90GP	140	90	90
(S)—Summer.	(W)—Winter.	Hyp—Hypoid gear oil.		140	90	140GP	90GP	140	90	90

GP—General purpose gear lubricant.

# BECK

# CUB



**Model Silverliner**



**Models 16-S, 19-T**

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## BATTERY

MODEL	AMM. Hr. Capacity	Number of Plates	Terminal Grounded
Beck Silverliner .....	*	17	Pos
Cub Coach 16-S, 19-T .....	135	17	Pos

\*—2 batteries.

## TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
Beck Silverliner .....	430-450	310-330	105-115
Cub Coach 16-S, 19-T .....	55-60	95-105	45-50

## CAPACITIES

MODEL	ENGINE QUARTS	TRANSMISSION PINTS	REAR AXLE PINTS	COOLING SYSTEM CAPACITY, QUARTS
Beck Silverliner .....	20	12	23	56
Cub Coach 16-S, 19-T .....	5	5	3	22

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Not unless noted)	SPARK PLUG				Breaker Point Gap	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	
Beck Silverliner .....	Cum NHB600	6-5½x6	.....	20°B	.....	.014	.027	.....	Diesel	14mm	A	.025
Cub Coach 16-S, 19-T .....	Ford-7HT	6-3.3x4.4	50-2000	11°B	.....	.015	.009-11e	.013-15c	CH	H-9	TC	525

A—.025-.028. C—Cold.

## VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Beck—NHB 600 Cub Coach 16-S, 19-T .....	See 116	Cummins page 92 1.75	50	2.109

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
Beck Silverliner .....	0- $\frac{1}{16}$	1° $\frac{1}{4}$ to 1°	3° 1-3½°	8° 7½-8°
Cub Coach 16-S, 19-T .....	0- $\frac{1}{16}$	1° $\frac{1}{4}$ to 1°	3° 1-3½°	8° 7½-8°

## LUBRICATION

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter	
Beck Silverliner .....	(S)30 30 above 32°	20@10° to 32° 20W@10° to 32°	10 below 10° 10W@10° to 10°	140 140	90 90	140 140EP	90 90EP	90 90EP	90EP	90EP	140

(S)—Summer. EP—Extreme pressure lube.

# FITZJOHN



Models Cityliner, Duraliner,  
Super Duraliner

## MAINTENANCE DATA

# FLXIBLE



Models B, CR, C, C-1

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95.

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
FITZJOHN Cityliner, Duraliner	150	21	P
Super Duraliner	158	17	P
FLXIBLE All Models	160	102	

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
FITZJOHN Her JXLD Wau. 140GKB	75 130	a 130	56 100
FLXIBLE B... CR, C, C-1	65-70 75-80	90-100 100-110	60-65 40-50

a—Front and intermediate 70, center and rear 60.

## CAPACITIES

MODEL	ENGINE Quarts	Trans- mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
FITZJOHN Cityliner	9			36
Duraliner	9		15	28
Super Duraliner	15		23	56
FLXIBLE B CR, C C-1	16 5½ 5	5 8 24*	20 6 23	56 50 54

\*—Includes transfer case.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap Spark Occurs °TC A-After B-Before	Spark Occurs Fly- Wheel Teeth °TC A-After B-Before	Crankshaft Pressure at Conro. Pressure at Cranking Speed		
				CTC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap			
FITZJOHN Cityliner, Duraliner	Her JXLD Wau 140GKB	6-4x4 $\frac{1}{2}$ 6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	26-1600 40-2600	5°B 15°B	.011 ...	.010 A	.010 B	CH CH	H0 COM H-9	7/8 14mm	.025 .025	.022 .022	TC TC	...	
FLXIBLE B CR, C, C-1	Buick FB320 Chev 235	8-3 $\frac{1}{2}$ x4 $\frac{1}{2}$ 6-3 $\frac{1}{2}$ x3 $\frac{1}{2}$	35-35 mph 14-2000	14°B	.015 .006	.019 .010	.019 .020	AC AC	46 104	14mm 14mm	.025 .035	.015 .020	6°B 5°B	...	125 110
A—.012-.014. B—.024-.026.															

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FITZJOHN HER JXLD WAU 140GKB	58	1.394 1 $\frac{1}{2}$	43 67	1.920 2 $\frac{1}{2}$
FLXIBLE Buick	I. { 51 O. { 77	1 $\frac{1}{2}$ 1 $\frac{1}{2}$	20 32	1 $\frac{1}{2}$ 1 $\frac{1}{2}$
Buick (hyd. valve lifters)	I. { 52 O. { 120	1 $\frac{1}{2}$ 1 $\frac{1}{2}$	24 52	1 $\frac{1}{2}$ 1 $\frac{1}{2}$
Chev. (235 cu.-in.)	Free length	2 $\frac{1}{8}$ in.	Press. @ 1 $\frac{1}{2}$ in., 124-140 lb.	

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
FITZJOHN Cityliner, Duraliner Super Duraliner	1 $\frac{1}{2}$ 1 $\frac{1}{2}$	1 2	1 $\frac{1}{2}$ 2	±
FLXIBLE B CR, C C-1	1 $\frac{1}{2}$ -1 $\frac{1}{2}$ 1 $\frac{1}{2}$ -1 $\frac{1}{2}$ 0-1	1 $\frac{1}{2}$ -1 $\frac{1}{2}$ 1 $\frac{1}{2}$ -1 $\frac{1}{2}$ 1 $\frac{1}{2}$ -2	1 $\frac{1}{2}$ 1 $\frac{1}{2}$ -2	±

\*—Under load not to exceed 0°.

\*\*—1° flat spring full load no movement.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
FITZJOHN Cityliner Duraliner Super Duraliner	(S)30 (S)30 (S)40	(W)30 (W)30 (W)40		140 140 140	90 90 90	140Hyp 140Hyp 140Hyp	90Hyp 90Hyp 90Hyp	140 140 140	140 140 140	140 140 140
FLXIBLE B, C-1 CR, C	(S)10* (S)10*	(W)10* (W)10*		50Mo 140Mo	50Mo 90Mo	C 140Mo	C 90Mo	50Mo 140Mo	50Mo 90Mo	E

J—SAE 90 below 32°F, SAE 140 above 32°F.

C—High grade lubricant equivalent to U. S. Specification No. 2-105-B.

E—Viscous, adhesive, medium bodied, semi-fluid grease to withstand being washed away and to protect parts from road shock.

(S)—Summer.

(W)—Winter.

Hyp—Hypoid gear lube.

\*—SAE 20 if oil consumption becomes excessive. Not heavier than 30.

MO—Straight mineral oil.

# G. M. C.



## Models TDH, TGH, PD, PDA

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap		
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap			
TGH 2708, 3101	GMC 270	6-3½x4	40-3200a	4°B		.012	.012	.020	AC	44CCM	14mm	.030	A	5°B	110 Min
TDH 3209, 3612, PDA 3704†	GMD 4-71	4-4½x5	40-2000a					.009		Diesel					385°
TDH 4010, 4509, PD 4102†	GMD 6-71	6-4½x5	40-2000a					.009		Diesel					385°

\*—At 500 rpm.

†—All Diesels.

a—25 psi minimum at speeds shown for worn engines.

A—.018-.024.

## VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
270	147	1 7/8	58	1 1/2
4-71, 6-71 Exhaust	140	1 1/2	44	2 1/8

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
TGH 2708, 3101	1/16-1/8	1	3 1/4	8 1/2
TDH 3209, 3612	1/16-1/8	1	3 1/4	8 1/2
TDH 4010, 4509	1/16-1/8	1	3 1/4	8 1/2
PD 4102	1/16-1/8	1	3 1/2	5 1/2
PDA 3704	1/16-1/8	2	3 1/2	5 1/2

## LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	
TGH-2708, 3101, TDH-3209, 3612, 4010, 4509, PD4102, PDA 3704	30 above 32°	20W below 32°			A 50	A 50	140	90	B B

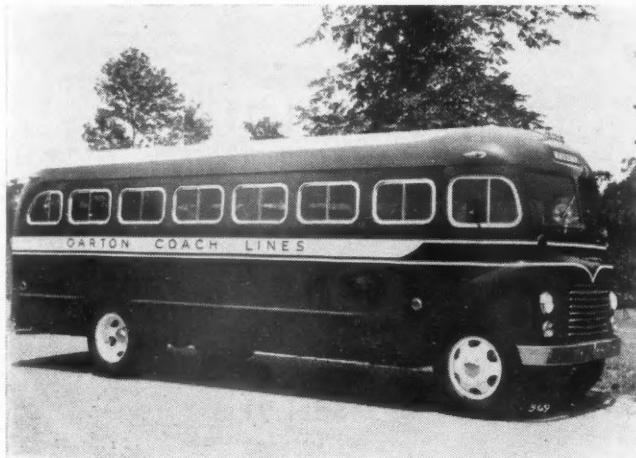
A—Special hydraulic oil.

B—Special straight gear lube.

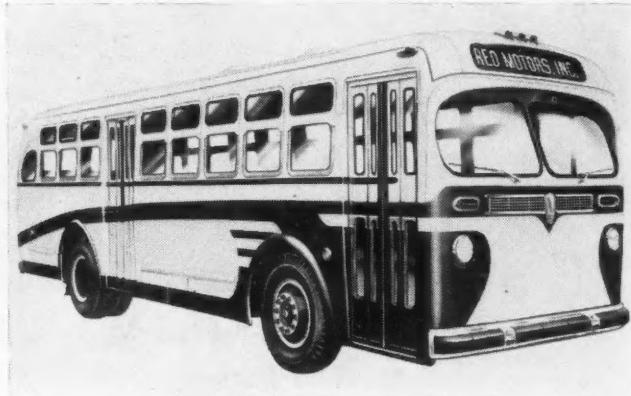
# KALAMAZOO

## MAINTENANCE DATA

# REO



**Model Cruiser**



**Model Flying Cloud**

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## BATTERY

MODEL	Amperes-Hr. Capacity	Number of Plates	Terminal Grounded
Kalamazoo Cruiser	160	17	Pos.
Reo Flying Cloud		17	Pos.

## TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
IHC 269	75-85	100-110	60-70
Cont. TH 6427	130-140	100-110	100-110

## CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
Kalamazoo Cruiser	7	16	9	21
Reo Flying Cloud			40*	40*

\*With torque converter, 44 qt.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lbs. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Operating Tappet Clearance (Not unless noted)	SPARK PLUG				Breaker Point Gap	
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	
Kalamazoo Cruiser	IHC 269	6-3 1/2 x 4 1/2	40-2000		16°B		.018	.018	AC	43	18mm	.024
Reo Flying Cloud	Cont. TH 6427	6-4 1/2 x 4 1/2	40-1500			.022	.016	.016	CH		.025	A .024

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
IHC 269 Cont. TH 6427	107 I.	1.668	13 O.	2 13/16 1 1/8

I—Inner, O—Outer.  
\*—Free length.

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
Kalamazoo Cruiser	1/8-1/4	1	1	8 1/2
Reo Flying Cloud	1/8-1/4	1	1	8

## LUBRICATION

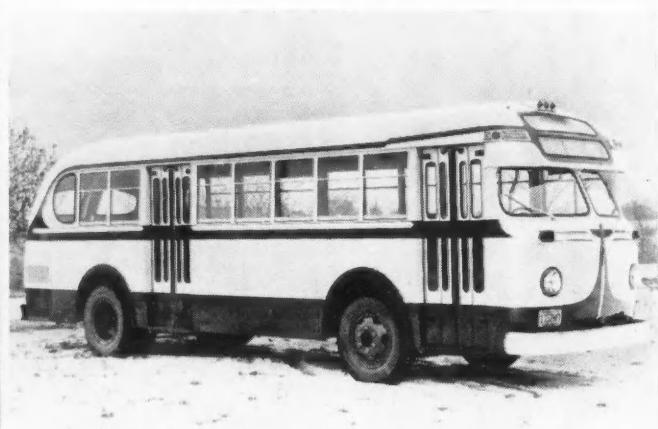
MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
Kalamazoo Cruiser Reo Flying Cloud	(S) 40 40 above 32°	(W) 20 30 below 32°	20W below 0°	140	90	140	90	140	90	GL

S—Summer.

GL—Gear lube.

W—Winter.

# SOUTHERN TRANSIT



**Models F-31, F-35, F-41, S-36,  
S-41, S-45 Series**

**Model 91**

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## BATTERY

MODEL	Ann. Hr. Capacity	Number of Plates	Terminal Grounded
SOUTHERN All Models.....	160°	102	Pos
TRANSIT 91.....	160	17	Neg
*—Discharge at 20 hr.			

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds- feet)	Main Bearings (pounds- feet)	Connecting Rod Bearings (pounds- feet)
SOUTHERN Wau. 6MZA.....	75	75	68
Wau. 140GKB.....	130	130	100
TRANSIT 91.....	70-75	100-110	100-110

## CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
SOUTHERN F-31M.....	15	8	20	60
F-31H.....	15	8	23	60
F-35M, F-41M.....	15	9	23	60
F-35H.....	14	9	23	60
S-36H.....	14	8	23	60
S-36M.....	14	8	23	60
S-41H, F-45H.....	14	9	31	60
S-41M, F-45M.....	14	8	31	60
TRANSIT 91.....	9	8	14	40

M—Mechanical trans.  
H—Hydraulic trans.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG				Breaker Point Gap						
				°TC	Fl/wheel TC		Intake	Exhaust	Make	Type	Size						
SOUTHERN COACH, Note 1 F-31M, F-31H, F-35M, F-35H, F-41M.....	Wau 6MZA*	6-4 $\frac{1}{2}$ x 4 $\frac{3}{4}$	40-2100	8°B	2.83	.008	.010C	.020C	CH	8 COM	18mm	.025	.020	5B	TC	TC	80†
S-36M, S-36H, S-41M, S-41H, S-45M, S-45H.....	Wau 140GKB	6-4 $\frac{1}{2}$ x 5 $\frac{1}{2}$	40-2100	15°B	5.3	.017	.013C	.025C	CH	10 COM	14mm	.025	.020	6°B	TC	TC	100†
TRANSIT 91.....	Con B6427	6-4 $\frac{1}{2}$ x 4 $\frac{3}{8}$	40-50-1800	16	.....	.017	.017C	.022C	5 COM	18mm	.030	.022	6°B	3B	90†		

\*—Horizontal. †—Minimum. C—Cold.

Note 1—Models designations ending in M have mechanical transmissions. Models designations ending in H have hydraulic transmissions.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
SOUTHERN Waukesha 6MZA.....	101	1 $\frac{1}{2}$	64	2 $\frac{1}{2}$
140GKB.....	O. 127	1 $\frac{1}{2}$	67	2 $\frac{1}{2}$
I. 70	1 $\frac{1}{4}$	30	1 $\frac{1}{2}$	
TRANSIT Con. B6427.....	O. 119	1.52	61	1 $\frac{7}{8}$
I. 31.5	1 $\frac{1}{4}$	14.3	1 $\frac{1}{2}$	

O.—Outer. I.—Inner.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
SOUTHERN All Models.....	40 above 70°	30 above 50°	A	50	50	0-65°	0-65°	250	160	CL
TRANSIT 91.....	40 summer	30 winter		140MO	90MO	140EP	90EP	90EP	90EP	140

A—20/20W above 30°, 10W below 30°.

CL—Chassis lube.

\*—Government specification.

MO—Mineral oil straight.

EP—Extreme pressure gear oil.

## FRONT END

MODEL	TOE-IN (in Inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
SOUTHERN F-31, F-35*	1 $\frac{1}{8}$ ± $\frac{1}{16}$	1 ± $\frac{1}{2}$	1	8
All Models.....	1 $\frac{1}{8}$ ± $\frac{1}{16}$	1 ± $\frac{1}{2}$	3	5 $\frac{1}{2}$
TRANSIT 91.....	1 $\frac{1}{8}$ - $\frac{1}{8}$	1	3	8 $\frac{1}{2}$

\*—With 35141 or 36008 axles.

†—With F-900 series axle.

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
34S, 38S 41S, 44S, 58D <sup>1</sup>	20° 20°	7** 7**	12a 21a	42† 42†
a—Pounds. —12 qt. change. **—Mech. 11 pts. †—Without heaters.				

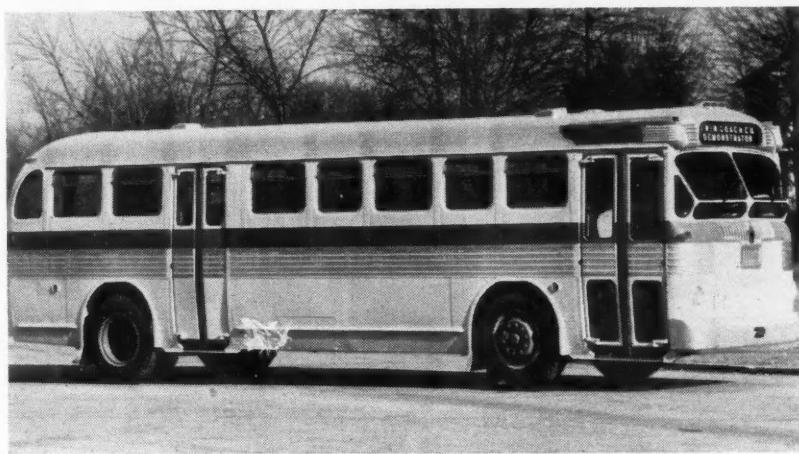
<sup>1</sup>—Quantities shown are for each engine-transmission unit.

## MAINTENANCE DATA

# TWIN COACH

## BATTERY

MODEL	Amo. Hr. Capacity	Number of Plates	Terminal Grounded
All Models	158	17	Pos



## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
FTC-180, 210	80	90	90

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap				
					°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size				
Engines Interchangeable In All Models	FTC-180 FTC-210	6-4½x4¾ 6-4½x5	45-2000 45-2000	12°B 12°B	... ...	.018 .018	.012 .012	.015 .015	CH* AL*	J-8* AR-5*	14mm 14mm	.025* .033*	.018 .018	TC TC	155† 150†
*—Champion or Auto-Lite spark plugs can be used in both engines.															

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FTC-180, 210	132-140	1 5/16	65-72	1 1/8

## FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
34S, 38S, 58D* 41S, 44S	1 1/8	1	1 1/2	8 5 1/2
*—And trailing axles.				

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
34S, 38S 41S, 44S, 58D <sup>1</sup>	10 above 0° 10 above 0°	20 above 20° 20 above 20°	30 above 50°* 30 above 30°*	140EP† 140EP†	90EP† 90EP†	140EP 140GO	90EP 90GO	140EP 140EP	90EP 90EP	No. 1 CG No. 1 CG

\*—SAE 40 above 75°F.

†—With torque converter use SAE 50 engine oil, summer and winter.

EP—Extreme pressure lube.

CG—Chassis grease.  
GO—Gear oil.

# WHITE



## Models 1136, 1136S, 1140, 1140S, 1144, 1144S

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
1136, 1140, 1136S, 1140S 1144, 1144S	Own 280TA Own 24A	6-4½x5 12-4½x4½	15°B 10°B	—ZERO —ZERO	LASH— LASH—	CH CH	6COM 6COM	18mm 18mm	.025 .025	... 6°B ... .025						

## VALVE SPRINGS

MODEL	VALVE SPRINGS							
	Valve Open		Valve Closed		Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
1136, 1140, 1136S, 1140S (280TA) 1144, 1144S (24A)	190 124	1.827 2.013	93 77*	2.250 2.394				

\*—Installed height.

## LUBRICATION

MODEL	ENGINE				TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range				Summer	Winter	Summer	Winter	Summer	Winter	
1136, 1140, 1144 1136S, 1140S, 1144S	(S) 30 (S) 30	(W) 20 (W) 20			20° 70	10° 70	140 140	90 90	SGL SGL	SGL SGL	140 140

(S)—Summer. (W)—Winter.

\*—Approved torque converter fluid must be used.

SGL—Steering gear lubricant 150-160.

## CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
1136, 1140	15†	80	22	21 <sup>a</sup>
1144	10½†	80	22	21 <sup>a</sup>
1136S, 1140S	15†	20	22	21 <sup>a</sup>
1144S	10½†	20	22	21 <sup>a</sup>

\*—Gallons; with heaters.

†—Oil change with old filter.

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models	160	17	Po.

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
280 TA	105-110	70-75	70-75
24 A	85-90	70-75a	48-52

a—Front, center and rear. Intermediate, 105-115.

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
ALL MODELS	1/8	1	0	8 <sup>1</sup> / <sub>2</sub>

## CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts	
CHEVROLET	5 1/2	1 1/2	3 1/2	15	
DODGE	5	2 1/2	3 1/2	15	
FORD (6 Cyl.)	5*	4	3 1/2	17.3	
(8 Cyl.)	5*	4	3 1/2	22	
NASH (Statesman)	5	2 1/2	3	14	
PLYMOUTH	5	2 1/2	3 1/2	15	
PONTIAC (6 cyl.)	5	1 1/2	3 1/2	18.21	
STUDEBAKER (Champion)	6	1 1/2	2 1/2	10	

\*—Includes oil filter. †—5 1/2 qt. dry, 5 qt. refill.

## MAINTENANCE DATA

# PASSENGER CARS

## BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
CHEVROLET	100	15	Neg
DODGE	105	15	Pos
FORD (6 Cyl.)	100	17	Pos
(8 Cyl.)	90	15	Pos
NASH (Statesman)	90	13	Pos
PLYMOUTH	100	15	Pos
PONTIAC	100	15	Neg
STUDEBAKER (Champion)	100	15	Pos

## TENSIONS

ENGINE MODEL	Cylinder Head (pounds per foot)	Main Bearings (pounds per foot)	Connecting Rod Bearings (pounds per foot)
CHEVROLET	70-80	100-110A	40-50
DODGE	{ C65-70 N52-57	74-80	53-58
FORD (6 Cyl.)	65-70	100	45-50
(8 Cyl.)	65-70	100	45-50
NASH	57-60	66-70	27-30
PLYMOUTH	{ C65-70 N52-57	74-80	53-58
PONTIAC	80	91-102	42-51
STUDEBAKER (Champion)	50-54	90	50

G—Cap screws. N—Nuts. A—With oiled threads.

## TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Operating Tappet Clearance (Hot unless noted)	SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Spindle
						°TC	Flywheel Teeth °C	Intake	Exhaust	Make	Type	Size	Gap
CHEVROLET		6-3 1/2 x 3 1/2	14 @ 39	1°B	**	.006	.013	AC	46-5	14mm	.035	.018A	5°B
DODGE		6-3 1/2 x 4 1/2	45 @ 20	8°B	.014	.008	.010	AL	A-5R	14mm	.035	.020	TC
FORD (6 Cyl.)		6-3 1/2 x 4 1/2	50-54 @ 30-40	11°B	.015	.010C	.014C	CH	H-10	14mm	.030	.025	TC
(8 Cyl.)		8-3 1/2 x 3 1/2	40 @ 30-40	5°B	a	.011	.015	CH	H-10	14mm	.030	.015	2°B
NASH (Statesman)		6-3 1/2 x 4 1/2	50 @ 30	6°B	.019	.015	.015	AL	A-5	14mm	.030	.021	TC
PLYMOUTH		6-3 1/2 x 4 1/2	45 @ 20	12°B	.014	.008	.010	AL	A-5R	14mm	.035	.020	TC
PONTIAC (6 Cyl.)		6-3 1/2 x 4	35 @ 40	5°B	.012	.012	.012	AC	45	14mm	.025	.022	6°B
STUDEBAKER (Champion)		6-3x4	40 @ 25-30	15°B	.020	.016C	.016C	CH	J-7	14mm	.025	.020	2°B

\*—At cranking.

†—At 1000 RPM. C—Cold.

A—with worn breaker-lever.

\*\*—Use exhaust valve set to zero lash.

§—@ 150 rpm.

## VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
CHEVROLET	132	1.505	58	1.821
DODGE	111	1.375	45	1.75
FORD (6 Cyl.)	116	1.75	50	2.11
(8 Cyl.)	82	1.81	38 1/2	2.13
NASH (Statesman)	83	1.437	39	1.75
PLYMOUTH	111	1.375	45	1.75
PONTIAC (6 Cyl.)	101	1.593	59 1/2	1.906
STUDEBAKER (Champion)	93-103	1.3125	49-54	1.656

## FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
CHEVROLET	0-1/8	1/2-1/2	1/2-1/2	4 1/2-5 1/2
DODGE	0-1/8	0-1/4	N1-P1	4 1/2-5 1/2
FORD (All Models)	1/4-1/8	N1/4P1/4	N1-P1/2	5 1/2
NASH (Statesman)	1/8-1/16	0-3/4a	N1-P1	8 1/2
PLYMOUTH	0-1/8	0-3/4a	N1-P1	4 1/2-6
PONTIAC (8 Cyl.)	0-1/8	0	N3/4	5 1/2
STUDEBAKER (Champion)	1/16-1/8	0-1a	±1	5 1/2

N—Negative.

P—Positive.

—@ 1/2° greater camber on left side.

## LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
CHEVROLET	20 above 32°	20W @ 10° to 32°		10W @ -10° to 10°	90	90	90Hyp	90Hyp	A	A
DODGE	30 above 32°	20W @ 10° to 32°		10W @ -10° to 10°	80	80	90EP	90EP	90	90
FORD (All Models)	20 above 32°	10W @ -10° to 32°		*	80	80	80Hyp	80Hyp	140M	140M
NASH (Statesman)	20 above 32°	20W @ 10° to 32°		*	90	80	90Hyp	90Hyp	140EP	140EP
PLYMOUTH	30 above 32°	20W @ 10° to 32°		10W @ -10° to 10°	80	80	90	90	90	Fib
PONTIAC (6 Cyl.)	20W-20 ab. 32°	20W-10 above 10°		10W @ -10° to 10°	90EP	90EP	90Hyp	90Hyp	B	A
STUDEBAKER	30 @ 32° to 90°	20 @ 10° to 32°		10-10W below 10°	90	90	90	90	90	A

\*—10% Kerosene below -10°. Fib—Heavy fiber universal joint grease.

Per—Permanent. M—Mild EP.

EP—Extreme pressure lube.

Hyp—Hypoid gear lube.

B—All-season steering gear lube.

# TROUBLE SHOOTING

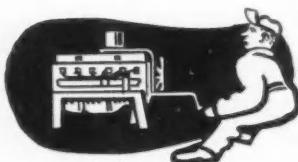
Noise, wear, appearance or peculiar operating characteristics tip off the troubleshooter in locating breakdowns and causes of failure. This comprehensive guide will help the me-

chanic track down potential road breakdowns, costly part failures and unsafe vehicle conditions. Following procedure is arranged in sequence for speed and efficiency.

## INDEX

Engine Starting .....	106
Engine Operation .....	106
High Gas Consumption .....	107
High Oil Consumption .....	107

Electrical System .....	108	Cooling System .....	110
Compression Losses .....	108	Transmission .....	110
Engine Valves .....	108	Clutch Noises .....	110
Engine Bearings .....	109	Steering .....	111
Hydraulic Brakes .....	109	Power Train .....	111
Air Brakes .....	109	Tire Wear .....	111



## Engine Starting

### 1. When starter won't function:

- a. If lights stay bright, check for—

Open circuit at starter  
Stuck solenoid  
Defective starter switch  
Improperly seating brushes  
Broken starter drive

- b. If lights dim slightly, check for—

Jammed starter drive  
Dirty commutator  
Resistance at starter switch

- c. If lights go out, check for—

Discharged battery  
Loose battery cable  
Corroded terminals  
Defective cell  
Tight engine bearings

### 2. When starter turns, and engine won't start:

- a. If ammeter is dead, there is an open circuit in the primary. Check for—

Points set too wide  
Corroded points  
Defective ignition switch  
Defective distributor drive  
Loose wire at distributor (primary)  
Open winding in coil  
Defective ammeter

- b. If ammeter shows steady discharge, there is a grounded primary. Check for—

Defective insulation, primary wires  
Points set too close  
Worn distributor cam lobes

- c. If ammeter reading is normal, but spark does not reach plugs, check for—

Wet high tension wires  
Defective distributor cap  
Defective rotor brush or contact  
Grounded wire, coil to distributor  
Corroded wells in distributor cap  
Defective coil or condenser

### 3. When spark is ok, but engine won't start:

- a. If there is no fuel at carburetor, check for—

Empty gas tank  
Clogged fuel line  
Clogged fuel filter  
Restricted vent in gas tank  
Defective fuel pump  
Air leak in line from tank  
Clogged carburetor screen

- b. If there is fuel at carburetor, check for—

Flooding at carburetor  
Choke not operating  
Water in gasoline  
Restricted carburetor jets

- c. If fuel does not reach carburetor, check for—

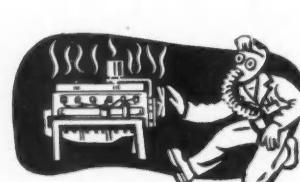
Poor engine compression  
Leaking intake manifold  
Loose carburetor flange  
Broken manifold heat control valve  
Restricted low speed circuit  
Valves out of time

- d. If there is flooding at carburetor, check for—

Choke out of adjustment  
Clogged air strainer  
High float level  
Excessive fuel pump pressure

### 4. When there is good spark and proper fuel supply—check for:

Defective spark plugs  
Spark plug gap set too wide  
Improper spark timing  
Water in cylinders  
Poor fuel



## Engine Operation

### 1. When engine misfires at idle:

- a. Trouble may be in ignition. Check for—

Plug gaps set too wide  
Defective spark plugs  
Sticking breaker arm  
Incorrect breaker point gap  
Loose wire in primary circuit  
Defective distributor rotor  
Corroded, pitted breaker points  
Cracked distributor cap  
Leaking or wet high tension wires  
Worn cam lobes on distributor shaft  
Worn distributor shaft bushings  
Defective coil or condenser  
Defective ignition switch  
Spark out of adjustment

- b. Trouble may be carburetion. Check for—

Dirt or water in fuel

Incorrect fuel level

Leaking intake manifold

Burned heat riser tube

### 2. When engine misfires at high speed:

- a. Check for conditions under No. 1

- b. Check spark for—

Weaker breaker arm spring  
Breaker points set too wide  
Defective spark advance  
Wrong type spark plugs  
Weak valve springs  
Excessive carbon in head  
Poor compression

### 3. When engine backfires:

- a. Through exhaust, check for—

Cracked spark plug porcelain  
Crossed spark plug wires  
Air leaks at manifold  
Weak valve springs

- b. Through carburetor, check for—

Poor quality fuel  
Excessive lean or too rich mixture  
Intake manifold air leaks  
Sticking distributor governor  
Improper ignition timing  
Engine preignition  
Incorrect valve timing  
Improperly seating valves

### 4. When there is preignition:

- a. Check for ignition causes—

Spark set too fast  
Incorrect type spark plugs  
Burned spark plug electrodes  
Faulty distributor advance

- b. Check for fuel causes—

Poor grade of fuel

Lean carburetor mixture

Inoperative heat control valve

- c. Check for overheated valves from—

Insufficient valve tappet clearance  
Incorrect valve seat width

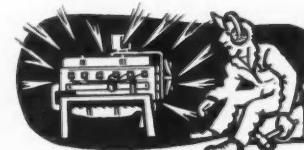
Thin edged valves

Too strong valve springs

Incorrect type of valve

- d. Check for other causes, such as—

Excessive engine temperature  
Carbon deposits in combustion chamber  
Sharp edges in combustion chamber  
Cylinder head projection into chamber



## Engine Noises

### 1. If there is knocking at the crankshaft, check for:

Insufficient oil supply  
Low oil pressure  
Diluted oil—water or gasoline

# Guide

by

**M. K. SIMKINS**Technical Editor  
Commercial Car Journal

Loose flywheel  
Excessive bearing clearance  
Excessive end play  
Out-of-round bearing journals  
Misaligned crankshaft  
Broken crankshaft web  
Distorted crankcase

**2. If there is knocking at the con-rods, check for:**

Insufficient oil supply  
Low oil pressure  
Excessive bearing clearance  
Misaligned con-rod caps  
Misaligned con-rods  
Tapered, out-of-round journals

**3. If there are piston noises, check for:**

Excessive piston to cylinder bore clearance  
Eccentric or tapered cylinders  
Insufficient piston pin clearance  
Piston hitting cylinder ridge  
Carbon in top of cylinder  
Piston hitting cylinder heat gasket  
Excessive clearance at ring groove  
Pin hole out of round with piston  
Ring lands not properly relieved

**4. If there is piston pin noise, check for:**

Excessive piston pin clearance  
Insufficient piston pin clearance  
Loose piston pin lock  
Con rod end rubbing piston pin boss

**5. If noise is at oil pump or distributor shaft, check for:**

Oil pump loose on mountings  
Damaged or scuffed oil pump gears  
End play in distributor shaft drive  
Worn shaft bushings  
Couplings loose on shaft  
Worn oil pump and distributor driven gear  
Worn or damaged camshaft drive gear  
Improper mesh of drive and driven gears

**6. If noise is in water pump, check for:**

Lack of lubrication (lubricated types)

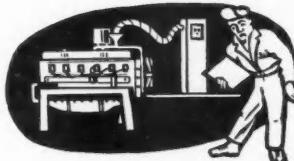
Worn shaft bearings  
Pulley loose on shaft  
Pump impeller loose on shaft  
Excessive end play of pump shaft  
Impeller blades rubbing pump housing  
Impeller broken or pin sheared

**7. If noise is at the engine fan, check for:**

Belt adjustment too tight or too loose  
Grease or rust on pulleys  
Worn or burned fan belt  
Incorrect type or size fan belt  
Misaligned pulley  
Excessive fan shaft end play  
Fan blades loose on spider of hub  
Fan blades striking radiator  
Unbalanced fan assembly  
Uneven pitch of fan blades  
Bent, distorted fan blades

**8. If noise is in fuel pump, check for:**

Fuel pump body loose on engine  
Scored lever or cam eccentric  
Interference of lever with crankcase surface  
Worn rocker arm or rocker arm spring  
Weak or worn rocker arm contact spring



## High Oil Consumption

**1. Check for external leakage at:**

Outside oil lines  
Front main bearing  
Rear main bearing  
Oil pan gaskets  
Crankcase ventilator pipe  
Fuel pump gaskets  
Valve cover gaskets  
Timing gear cover gasket  
Crankcase drain plug  
Oil filter gaskets  
Oil filter connections

**2. Check for defective rings due to:**

Worn or broken rings  
Insufficient tension in rings  
Insufficient clearance of ring gap  
Ring fitted too tight in grooves  
Carbon in oil ring slots  
Insufficient ventilation of oil rings  
Rings out of round, warped, twisted  
Wrong size rings

**3. Check for defective cylinder surface showing up in:**

Worn, wavy, distorted cylinders  
Rough finish in cylinders  
Scored cylinder walls

**4. Check for defective pistons due to:**

Normal wear  
Out of round pistons  
Collapsed piston skirt  
Insufficient drain holes in oil ring grooves  
Worn ring grooves  
Improperly fitted pistons  
Misalignment of piston and rod assemblies

**5. Check for defective bearings due to:**

Scored con-rod bearings  
Worn main bearings  
Leaking main bearing seals  
Worn camshaft bearings  
Sput holes in worn rods  
Plugged oil seal drain  
Out-of-round crankshaft  
Misaligned bearing caps  
Misaligned crankshaft

**6. Check for defective valves due to:**

Valve timing too late  
Incorrect tappet clearance  
Leaky or burnt valves  
Plugged valve chamber drain  
Worn valve seats  
Worn valve stems or guides

**7. Check condition of oil:**

Oil level too high  
Thin, diluted oil  
Oil pressure too high  
Broken oil lines  
Poor grade oil

**8. Check for other contributing factors:**

Clogged breather  
Clogged oil filter  
Clogged muffler, tail pipe  
Leaky intake manifold gaskets  
Defective spark plugs  
Faulty carburetion  
Overheated engine  
Defective booster pump diaphragm  
Worn timing gears or chain  
Sustained high speeds  
Improper break-in of newly re-rung engine



## High Gas Consumption

**1. When trouble is in carburetor—check for:**
**a. Flooding or leaking caused from—**

Cracked carburetor casting  
Leaking line connections  
Defective carburetor bowl gasket  
High float level  
Plugged vent hole in cover  
Loose float needle seat  
Defective needle valve seat gasket  
Worn needle valve and seat  
Foreign matter clogging needle valve  
Ridge worn in lip of float  
Worn float pin or bracket  
Float binding in bracket  
High fuel pump pressure

**b. An overrich mixture caused from—**

Restricted air cleaner  
Too much oil in air cleaner  
Choke lever stuck  
Choker valve spring stuck

Leaking float  
High float level  
Warped or bent bowl cover  
Worn metering rod  
Worn high speed circuit jets  
High fuel pump pressure

**c. Too rich choke caused from—**

Plugged air strainer  
Binding butterfly valve  
Choker shaft binding  
Stuck or binding choke piston  
Leak in choke gasket  
Improper adjustment of accelerating pump

**2. When trouble is in fuel pump, check for:**

Leakage around diaphragm cover  
Leaking fuel pump diaphragm  
Leaking sediment bowl gasket  
Loose valve seats  
Warped check valves  
Dirt, sediment in valves  
Corroded valve seats  
High fuel pump pressure

**3. When there is fuel loss, check for:**

Leakage at lines and connections  
Leaking gas tank  
Evaporation from partially filled tank  
Evaporation from overheated lines  
Leakage at filler cap

**4. When trouble is caused by ignition conditions, check for:**

Incorrect spark timing  
Leaking high tension wires  
Incorrect spark plug gap  
Fouled spark plugs  
Worn breaker points  
Faulty spark advance  
Defective condenser  
Weak ignition coil  
Pre-ignition

**5. When trouble is caused by poor compression check for:**

Leaking head gasket  
Worn or broken piston rings  
Worn pistons and cylinders  
Worn valve stems or guides  
Sticking valves  
Poorly seating valves  
Weak valve springs  
Distorted head or block

**6. Check for other vehicle factors such as:**

Loose carburetor flange on manifold  
Improperly adjusted or worn throttle linkage  
Restricted exhaust system  
Carbon in manifold  
Improperly adjusted manifold heat control  
Leaking windshield wiper hose  
Leaking intake manifold gasket  
Leaking manifold intake heat riser  
Overheating engine  
Unsatisfactory engine warm-up  
Use of poor grade of gasoline

**7. When chassis conditions are to blame, check for:**

Dragging brakes  
Slipping clutch  
Under-inflated tires  
Excessive engine friction

**8. When driving conditions are to blame, check for:**

High speeds  
Rapid acceleration  
Excessive use of low gears  
Excessive idling  
Improper engine warm-up  
Use of too heavy lubricants  
Driving over hilly country

(Turn to next page, please)

# Troubleshooting Guide

Continued from Page 107



## Electrical

### 1. With battery as guide:

- a. If frequent charge is necessary, check for—  
Low regulator setting  
Slipping generator drive  
Corroded battery terminals  
Worn out, inefficient battery  
Short circuit in charging circuit  
Stuck cut-out in regulator  
Excessive use of electrical units  
Excessive drag in engine
- b. If there is high water loss, check for—  
Too high charging rate  
Old, inefficient battery  
Leaking battery cell  
Cracked battery case  
Defective current regulation
- c. If battery will not take full charge, check for—  
Low water level  
Worn out battery  
Spilled electrolyte  
Internal short circuit  
Impure electrolyte (doped up)

### 2. With starter as guide:

- a. If there is excessive current draw, check for—  
Broken, jammed starter drive  
Dirty, gummed armature  
Shorted armature  
Grounded armature or field  
Resistance in engine parts  
Use of too heavy oil in winter  
Misaligned starting motor  
Worn armature shaft bearings  
Misaligned armature shaft  
Loose field pole pieces
- b. If starter fails to operate, check for—  
Poor battery ground  
Jammed drive  
Broken teeth on flywheel  
Direct ground in switch  
Burned contact points in switch  
Improper seating brushes  
High mica between commutator segments  
Shorted armature  
Shorted field or brushes
- c. If there is excessive noise at starter, check for—  
Defective starter drive  
Chipped flywheel teeth  
Insufficient lubrication  
Worn armature shaft bearings  
Misaligned starting motor  
Loose starter mounting  
Sprung armature shaft
- d. If there are burned commutator bars, check for—  
Excessive arcing at brushes  
Excessive battery voltage  
Improper seating brushes  
Open circuited armature coils  
Open field circuit

### 3. With lights as guide:

- a. If there is excessive voltage drop, check for—  
Corroded, rusty grounds  
Loose connections  
Cracked, leaking wire insulation  
Frayed, broken cable strands  
Insufficient capacity wiring
- b. If lamps fail to light, check for—  
Blown fuse  
Burned out bulbs  
Loose connections  
Open circuit in wiring  
Run down battery  
Defective light switch
- c. If lights flicker, check for—  
Loose connections  
Poor grounds at lamps
- d. If bulbs burn out, check for—  
Excessive battery voltage  
Corroded, defective grounds  
Excessive charging rate  
Short in wiring  
Incorrect type of bulbs  
Poor grade of bulbs

### 4. With generator as guide:

- a. If generator fails to charge, check for—  
Open charging circuit  
Cut-out points stuck open  
Sticking brushes  
Dirty, gummy commutator  
Burned out commutator  
Grounded wire in charging circuit  
Grounded field coil  
Short circuit in field  
Open coil in cut-out windings
- b. If there is a low, unsteady charging rate, check for—  
Conditions listed in (a.)  
Slipping fan belt  
Loose generator pulley  
Improperly seating brushes  
Worn brushes, weak spring tension  
Incorrect type of brushes  
Out of round commutator  
Resistance in charging circuit  
High mica between commutator bars  
Grounded generator field  
Open armature winding  
Loose pole pieces in field circuit  
Defective ammeter
- c. If there is an excessive charging rate, check for—  
Improperly set regulator  
Defective regulator  
Overheated battery  
Improper third brush setting  
Shorted field—internal ground type  
Grounded field—external ground type
- d. If generator is noisy, check for—  
Misaligned fan belt or pulley  
Improperly seating brushes  
Worn or damaged bearings  
Insufficient bearing lubrication  
Loose generator drive pulley  
Loose field pole pieces  
High armature slot wedges  
Excessive output
- e. If there is arching and noise at brushes, check for—  
High mica between commutator bars  
High commutator bars  
Out of round commutator  
Sprung armature shaft  
Dirty, glazed commutator  
Hard spots in brushes  
Weak brush spring tension  
Brushes worn down or loose  
Loose wiring at pigtail  
Shunts loose in brushes  
Excessive output
- f. If armature fails prematurely, check for—  
Excessive charging rate  
Failure of voltage regulator  
Improper type brushes  
Worn shaft bearings

### 5. With regulator as guide:

- a. If there is excessive oxidation of points, check for—  
Reversed polarity  
Poor ground connections  
Misaligned contact points  
Improper air-gap setting  
Shorted field in generator  
Wrong type of replacement points  
Open shunt resistors
- b. If there is excessive point pitting, check for—  
Long usage with normal wear  
High current output of generator  
Insufficient point spring tension  
Reverse polarity in generator  
Pitting cut-out points  
Suppression condenser on "F" terminal  
Items under 2A
- c. If there are burned coil windings, check for—  
Excessive current output  
Stuck cut-out points  
Short in charging circuit  
Resistance in ground circuit
- d. If there are sticking contact points, check for—  
Misaligned points  
Poor ground connection between generator and regulator  
Shorted field coil in generator  
Pitted or oxidized points  
Defective winding in regulator  
Open resistance unit

### 6. With ignition system as guide:

- a. If there is breaker point oxidation, check for—  
High battery voltage  
Oil and crankcase vapors  
Filings lodged on points  
High resistance in condenser circuit  
Incorrect type ignition coil
- b. If there is ignition coil failure, check for—  
Extremely high voltages  
Moisture formation  
Excessive heat from engine
- c. If there are condenser failures, check for—  
Normal fatigue  
Excessive heat  
Moisture
- d. If spark plugs burn and foul, check for—  
Incorrect type plug  
Too rich fuel mixture  
Engine pumping oil  
Inferior grade of gasoline  
Overheated engine



## Compression Losses

### 1. Check for compression failures:

- a. If engine performance shows up in—  
Loss of power  
Oil pumping—blow-by  
Smoking exhaust  
High oil consumption  
Diluted engine oil  
Poor acceleration
- b. Engine sounds indicate—  
Clicking—broken ring or land  
Knocking—piston slap or broken piston  
Hissing at breather—defective intake valve  
Hissing at exhaust—defective exhaust valve  
Regular hiss—blown gasket  
Backfiring through carburetion valve  
Backfiring on acceleration—valve failure  
Engine miss at all speeds

### c. A compression gage shows—

- Low compression reading  
Low reading—two cylinders  
Leak past valves—compressed air test

### d. A vacuum gage shows—

- Low vacuum gage reading  
Fluttering of needle  
Irregular drop in vacuum

### 2. Check piston ring conditions:

- a. If rings are broken, cause may be—  
Wrong type, size ring  
Ring striking top ridge  
Worn ring grooves  
Broken ring lands  
Insufficient ring tension  
Insufficient gap clearance  
Excessive side clearance in ring groove  
Undersize pistons  
Scored, wavy cylinder walls  
Overheating
- b. If there is ring sticking, check for—  
Compression blow-by  
Incomplete combustion  
Engine detonation  
Inadequate crankcase ventilation  
Improper engine cooling  
Insufficient ring land side clearance  
Dirty, contaminated oil  
Incorrect type of oil  
Poor grade of oil or fuel  
Lugging engine  
Excessive engine idle

### c. If rings are noisy, check for—

- Broken piston ring  
Worn ring lands  
Broken ring lands  
Lack of inner ring tension  
Top ring striking cylinder ridge  
Undersize pistons  
Wavy cylinder walls

### 3. Check for piston failures:

- a. If there are piston noises, check for—  
Carbon accumulations in head  
Broken piston, skirt, ring land  
Insufficient clearance at top ring land  
Collapsed piston skirt  
Eccentric or tapered cylinders  
Excessive piston to bore clearance
- b. If there is piston breakage, check for—  
Inadequate lubrication  
Overspeeding and overloading  
Pre-ignition  
Engine overheating  
Misaligned connecting rods  
Undersize pistons  
Eccentric or tapered cylinders  
Warped cylinder barrels

### 4. Check for cylinder failures:

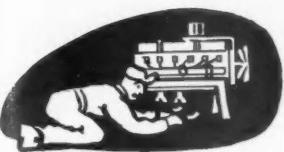
- a. If there is excessive scoring, check for—  
Inadequate lubrication  
Contaminated or poor oil  
Incomplete combustion  
Too harsh type rings  
Improper cylinder finish  
Sharp edge left on piston skirt  
Insufficient ring gap clearance  
Tight piston pins  
Misaligned connecting rods, pins  
Distorted block, crankshaft  
Cylinders bored out of line

- b. If there is cylinder warpage, check for—  
Engine overheating  
Improper head tightening  
Steam pockets in block  
Deposits between dry sleeve and bore  
Improper sleeve installation

### 5. Check on valve seating for:

- Insufficient valve-tappet clearance  
Broken, weak valve springs  
Improper valve timing  
Deposits under head and stem  
Warped heads and stems  
Cracked valves and seats  
Burned valves and seats  
Warped or binding guides  
Improper grinding operations  
Worn timing gears or chain

## MAINTENANCE DATA



### Bearings

#### 1. Check for premature wear:

Caused by dirt from—  
Careless service methods  
Contaminated oil  
Infrequent oil changes  
Dirty oil filters  
Dusty operation

#### 2. Caused by improper fitting due to:

Distorted con-rods  
Mixing con-rod caps  
Installing shells backwards  
Filing shell to fit  
Chiseling shell to reduce clearance  
Dirt between brg. and rod bore  
Out-of-round stems  
Tapered journals  
Warped crankshaft or block  
Excessive crankshaft end play  
Scored bearing surface  
Improper clearance  
Use of inaccurate tools  
Improper tensions of studs

#### 3. Caused by corrosion from:

Crankcase acid vapors  
Infrequent oil changes  
Poor crankcase ventilation  
Incomplete combustion  
Engine blow-by  
Inferior type of oil  
Overcooling  
Overheating

#### 4. Caused by improper vehicle operation such as:

Overspeeding  
Overloading  
Lugging on hills  
Spark detonation  
Improper engine break-in  
Racing a cold engine  
Use of wrong type, grade oil  
Use of improper fuel  
Improper spark timing

#### 5. Caused by lubrication failures resulting from:

Defective oil pump  
Clogged oil pump screen  
Excessive engine sludge  
Excessive engine temperature  
Use of too heavy oil in winter  
Insufficient engine warm up  
Insufficient quantity of oil  
Crankcase dilution  
Inadequate crankcase ventilation



### Engine Valves

#### 1. When valves break, check for:

Excessive tappet clearance  
Cocked springs or retainers  
Weak valve springs  
Too much spring pressure  
Excessive temperatures  
Excessive engine speeds  
Out of round seats  
Worn valve guides  
Worn retainers  
Worn retainer grooves  
Block distortion  
Defective valve forgings

#### 2. When valves burn, check for:

Close tappet clearance  
Lean air-fuel mixture  
Improper block cooling  
Improper spark plug heat range  
Pre-ignition  
Improper spark timing  
Weak valve springs  
Gum formations on stem  
Deposits on valve seats  
Excessive detonation  
Exhaust back pressure  
Improper valve-guide clearance  
Warped valves or guides  
Incorrect valve seat width  
Inferior fuel  
Eccentric valve face  
Defective valve material

#### 3. When there are valve deposits check for:

Inferior fuel  
Inferior oil  
Improper cooling  
Rich carburetor setting  
Dirty oil filters  
Dirty air filters  
Excessive oil pressure  
Poor lubrication of stem  
Worn valve stem  
Bell-mouthed valve guides  
Too much engine idling  
Worn rings, cylinders, pistons

#### 4. When valve springs break, check for:

Normal fatigue  
Valve flutter at high speed  
Corrosion of valve springs  
Improper crankcase ventilation  
Worn camshaft bearings  
Worn crankshaft or bearings  
Worn timing gears or chains  
Worn lobes on camshaft

#### 5. When valves are noisy, check for:

Excessive tappet clearance  
Inadequate lubrication of rocker arms  
Wear in tappets, adjusting screw  
Wear in cam lobes  
Wear in push rods  
Wear in rocker arm assembly  
Wear in valve guides

#### 6. When precision adjustments are impossible, check for:

Wear in valve stem tip  
Wear in adjusting tappet screw  
Wear in push rod ends  
Loose rocker arm assemblies  
Worn rocker arms  
Wear in tappet body  
Wear in spring retainer slot  
Wear in spring retainer cup



### Hydraulic Brakes

#### 1. Check from driver's seat for:

- a. Spongy pedal, a result of:  
Air in fluid  
Improper brake adjustment  
Improper brake fluid
- b. Rubbery pedal, a result of:  
Improper brake adjustment  
Improper lining-drum contact  
Lining of incorrect thickness
- c. No pedal reserve, a result of:  
Normal wear of linings  
Low hydraulic brake fluid  
Defective master cylinder
- d. Loss of pressure, a result of:  
External leak in lines  
Leak in master cylinder check valve  
Leak in cup of master cylinder  
Leak in wheel cylinder, internal  
Leak at stop light switch
- e. Overheating brakes, a result of:  
Improper adjustment  
Dirt and grime on drums  
High spots on drum  
Tight wheel bearings
- f. Fading brakes, a result of:  
Poor lining to drum contact  
Improper lining

#### 3. Check from the lift when:

##### a. One wheel drags, a result of:

Improper brake adjustment  
Shoes improperly installed  
Distorted cylinder cups  
Brake shoe seized to anchor pin  
Weak brake shoe return spring  
Sprung shoes  
Obstruction in line  
Loose wheel bearing

##### b. Wheel locks, a result of:

Loose lining  
Loose wheel bearing  
Loose anchor bolts  
Out-of-round drum  
Loose master cylinder mountings

##### c. Pedal striking toeboard, a result of:

Pedal stop ring out of seat in master cylinder  
Misalignment of brake pedal  
Misalignment of toeboard

##### i. Pedal failing to return, a result of:

Restricted bypass in master cylinder  
Weak pedal return spring  
Loose mountings of booster, pedal, master cylinder

##### j. No booster help, a result of:

Leak in vacuum lines  
Loose connections  
Worn valves in booster unit  
Leak in diaphragm of booster unit  
Linkage out of adjustment

#### 2. Check on a road test for:

- a. Poor brakes, no pedal reserve, a result of:  
Improper drum-lining contact  
Glazed linings  
Oil-soaked linings  
Improper pedal adjustment  
Improper linings
- b. Grabbing brakes, a result of:  
Improper shoe adjustment  
Grease-soaked linings  
Charred linings  
Scored drums  
Improper coefficient linings  
Loose dust shields

##### c. Side pull, a result of:

Improper shoe adjustment  
Excessive wear in drum  
Scored drums  
Grease-soaked lining  
Loose anchor pins  
Loose dust shield  
Different makes of lining  
Improper shoe assembly  
Water, mud in brakes  
Front spring U-bolts loose  
Tires not properly inflated  
Weak chassis springs

##### d. Squealing brakes, a result of:

Dirt in brake drum  
Foreign material embedded in lining  
Loose lining rivets  
Bent backing plate  
Sprung shoes  
Shoes scraping on backing plates  
Distorted brake drum  
Incorrect lining

##### e. Overheating brakes, a result of:

Improper adjustment  
Dirt and grime on drums  
High spots on drum  
Tight wheel bearings

##### f. Fading brakes, a result of:

Poor lining to drum contact  
Improper lining

#### 1. Check air pressure system for:

##### a. Slow pressure build-up, resulting from—

Too slow engine idle speed  
Slipping compressor drive  
Clogged compressor air strainer  
Leaking lines or connections  
Leaking discharge valves or seats  
Carbon in discharge line  
Excessive carbon in head  
Insufficient unloader valve clearance  
Worn piston rings in compressor  
Scored cylinder walls in compressor

##### b. Quick loss of pressure, resulting from—

Leaking lines or connections  
Leaking brake valves  
Sticking discharge valves  
Leaking governor valve

##### c. Compressor not unloading, resulting from—

Defective governor  
Governor out of adjustment  
Stuck unloading mechanism  
Excessive clearance, unloader valves  
Restriction in unloading line  
Carbon in unloader cavity

##### d. Noisy compressor, resulting from—

Loose drive pulley  
Worn, burned out bearings  
Worn connecting rods  
Loose piston pins  
Broken piston rings  
Broken discharge valves  
Weak, broken valve springs  
Carbon under discharge valves  
Carbon deposits in head  
Restricted oil line to bearings

##### e. Oil and water in system, resulting from—

Failure to drain tanks daily  
Clogged air strainer  
Worn rings in compressor  
Scored cylinder walls  
Excessive oil pressure  
Excessive temperature changes

(TURN TO NEXT PAGE, PLEASE)

## Troubleshooting Guide

Continued from Page 109

### 2. Check foundation system for:

#### a. Insufficient braking, resulting from—

- Inadequate air pressure
- Grease-soaked linings
- Brake valve out of adjustment
- Improper brake shoe adjustment
- Lining of improper diameter
- Glazed, worn out liners
- Drums turned too thin
- Push rods out of adjustment
- Cams out of adjustment
- Leaking brake chamber diaphragm

#### b. Slow brake application, resulting from—

- Low air pressure
- Improper brake shoe adjustment
- Restricted lines and tubing
- Excessive push rod travel
- Leaking brake valve diaphragm
- Frozen cams
- Moisture frozen in system

#### c. Slow release of brakes, resulting from—

- Improper brake adjustment
- Frozen cams
- Dry cam faces
- Frozen anchor pins
- Rusted cam lobes
- Weak retractor springs

### 3. Check on road test for:

#### a. Grabbing brakes, resulting from—

- Grease-soaked linings
- Loose brake liners
- Binding brake rigging
- Loose backing plate
- Defective brake valve
- Out-of-round drums
- Drums turned too thin
- Loose, broken spider brake
- Broken support plate
- Flat spots on cam

#### b. Side pull, resulting from—

- Improper brake adjustment
- Defective lining
- Oil soaked lining—one wheel
- Improperly adjusted push rod travel
- Broken shoe retractor spring
- Leaking diaphragm in brake chamber
- Unequal spring tension in diaphragm

#### c. Noisy brake application, resulting from—

- Loose liners or rivets
- Foreign particles imbedded in drums
- Poor lining contact with drum
- Loose backing plates
- Tool marks in drum
- Unbalanced brake linings
- Thin brake drums
- Glazed, thin linings
- Weak, broken retractor springs
- Broken, misaligned shoes



## Cooling System

### 1. When there is external leakage, check for:

- Loose, defective hose clamps
- Defective rubber hose
- Broken radiator seams
- Corrosion perforation of water tubes
- Loose core hole plugs
- Worn water pump shaft, seal, bearing

### 2. When there is internal leakage, check for:

- Loose cylinder head bolts
- Damaged cylinder head gasket
- Warped cylinder head or block
- Cracked cylinder head or block
- Excessive end play in countershaft, reverse idler, pinion
- Worn mainshaft pilot bearing
- Scuffed gear tooth contact surface
- Excessive backlash in constant mesh gear
- Unmatched constant mesh gears
- Worn, rough reverse idler gear
- Eccentric countershaft gear assembly
- Defective second speed mainshaft gear bushing
- Worn, scored countershaft bearings
- Scuffed gear tooth contact surface
- Worn transmission pinion bearing
- Broken joints in oil coolers

### 3. When there is loss from overflow, check for:

- Defective pressure valve in cap
- Leakage of overflow tank
- Defective radiator baffle plate
- Air leak on suction side of pump
- Air entrainment from top tank turbulence
- Restricted passages in radiator
- Steam formation at hot spots
- Foaming of cooling liquid
- Exhaust gas leakage into system

### 4. When there is restricted circulation, check for:

- Slipping fan belt
- Low or too high coolant level
- Clogged radiator core
- Collapsed radiator hose
- Stuck thermostat
- Pump impeller loose on shaft
- Pump blades broken or worn
- Clogged water jacket passages
- Distribution tube dislocated
- Air leak in suction side of system
- Inadequate cooling system capacity

### 5. When engine overheats, check for:

#### a. Cooling system factors caused by:

- Causes listed in No. 4
- Clogged bug screen
- Coated radiator core fins
- Radiator air baffles out of place
- Bent fan blades
- Oil and sludge in system

#### b. Spark conditions caused by:

- Incorrect ignition timing
- Improper fuel mixture
- Low oil level
- Defective spark advance mechanism
- Incorrect valve timing
- Pre-ignition
- Clogged exhaust or muffler
- Defective heat control valve
- Tight engine, bearings, pistons, rods

#### c. Operating factors caused by:

- Dragging brakes
- Overloading of vehicle
- Lugging engine on grades
- Excessive engine idling
- High sustained speeds
- Driving in sand, snow, mud
- Stop and go driving

### 6. When there is overcooling, check for:

- Defective thermostat
- Thermostat installed incorrectly
- Automatic shutters not functioning
- Defective heat control valve
- Inaccurate temperature indicator
- Excessive engine idling

### 7. When there is corrosion present, check for:

- Impurities in water
- Lack of rust inhibitor
- Improper draining and service
- Air leaks in system
- Electrolytic action
- High temperature

## Transmission

### 1. When there is noise in neutral, check for:

- Insufficient lubrication
- Incorrect grade of lubricant
- Misalignment of transmission
- Sprung or worn countershaft
- Excessive end play in countershaft, reverse idler, pinion
- Worn mainshaft pilot bearing
- Scuffed gear tooth contact surface
- Excessive backlash in constant mesh gear
- Unmatched constant mesh gears
- Worn, rough reverse idler gear
- Eccentric countershaft gear assembly
- Defective second speed mainshaft gear bushing
- Worn, scored countershaft bearings
- Scuffed gear tooth contact surface
- Worn transmission pinion bearing
- Broken joints in oil coolers

- Too much chamfer on detent ball notch
- Insufficient gear mesh
- Excessive end play of reverse idler
- Worn countershaft first speed gear
- First and reverse sliding gear loose on mainshaft splines
- Sliding gear teeth worn or tapered
- Worn, misaligned mainshaft splines

### 2. When there is loss of lubricant, check for:

- Lubricant level too high
- Stopped up transmission breather
- Damaged or improperly installed gaskets
- Damaged or defective oil seals
- Defective oil throw rings
- Loose drain plug, transmission cover
- Worn mainshaft bearings
- Cracked transmission housing
- Use of foaming lubricant

### 3. When transmission bearings fail prematurely, check for:

- Use of wrong type, grade of lubricant
- Lack of cleanliness in overhaul
- Securing too tight or too loose bearing adjustments
- Improper assembly of the unit
- Improper shifting of gears
- Excessive overloading of vehicle
- Lugging of engine



## Clutch

### 1. Check for clutch chattering resulting from:

- Improper clutch adjustment
- Oil or grease on facings
- Glazed friction facings
- Loose facings on driver plate
- Uneven spring pressures
- Damaged drive or driven plates
- Bent clutch shaft or clutch plate
- Binding pressure levers or release levers
- Binding drive plate hub
- Worn splines in transmission shaft
- Loose universal joint flange
- Improper alignment of transmission

### 2. Check for clutch grabbing resulting from:

- Improper clutch adjustment
- Oil or grease on facings
- Loose engine mounts
- Worn friction facings
- Uneven spring pressures
- Pressure plate binding on studs or pins
- Binding release levers
- Improper alignment of transmission with clutch

### 3. Check for clutch slips resulting from:

- Improper clutch adjustment
- Oil or grease on facings
- Binding clutch pedal
- Insufficient free pedal travel
- Worn clutch plates
- Binding pressure or release levers
- Weak, broken clutch pressure springs
- Binding of driving pins in pressure plate holes
- Improper alignment of clutch, engine, transmission
- Driver riding clutch pedal

### 4. Check for clutch dragging caused by:

- Improper clutch adjustment
- Oil or grease in clutch
- Improper pedal adjustment
- Improper alignment
- Dust or dirt in clutch

## MAINTENANCE DATA

Worn, misaligned clutch facings  
Clutch plate hub binding on shaft  
Binding pilot bearing or bushing  
Sticking release sleeve  
Warped, damaged pressure plate

### 5. Check for clutch rattling caused by:

Improper alignment  
Bent clutch shaft  
Worn, dry clutch release sleeve  
Unequal contact of pressure levers  
Dry or worn pilot bearing or bushing  
Worn release bearing  
Worn parts in release assembly  
Damaged clutch plate  
Weak or broken release lever anti-rattle springs  
Worn splines on clutch shaft or in plate hub  
Worn driving pins in pressure plate  
Excessive backlash in transmission or prop shaft  
Worn transmission main drive gear bearing

### 6. Check for clutch squealing caused by:

Dry clutch pilot bearing  
Lack of lubrication in release sleeve  
Misalignment of clutch with engine  
Bushings turning in crankshaft  
Worn transmission main drive gear bearing

### 7. Check for clutch knocking caused by:

Play between pressure plate lugs and their guides  
Worn release lever guide pins  
Release levers striking clutch plate  
Incorrectly installed metal baffle plate  
End play in crankshaft

### 8. Check for clutch vibration caused by:

Improper clutch assembly alignment  
Bent clutch shaft  
Improper fitting of pressure plate  
Loose floating type clutch release sleeve  
Pressure spring off center  
Flywheel out of balance  
Loose flywheel  
Defective vibration damper  
Loose engine mountings  
Worn universal joints  
Worn transmission rear bearing  
Loose emergency brake drum  
Loose pinion bearing in rear end



## Power Train

### 1. Check propeller shaft for:

- a. Excessive vibration resulting from—
  - Improper alignment of flanges
  - Misaligned, sprung drive shaft
  - Worn needle bearings in cross
  - Worn splines on shaft or yoke
  - Loose U-joint flange nut
  - Improperly installed key on pinion
  - Too short propeller shaft
  - Worn torque tube bushing
  - Missing bolt in flange
  - Worn rear transmission bearing
  - Misaligned rear wheels
  - Shifted rear axle
  - Sprung frame

### b. Excessive wear resulting from—

- Improper lubrication
- Too short shaft
- Excessive and thrust
- Overloading the vehicle
- Careless braking

### 2. Check universal joints for:

- a. Out of balance resulting from—
  - Excessive wear
  - Loose flange nut
  - Worn keyways
  - Incorrect key installation
  - Grease fitting interference
- b. Breakage resulting from—
  - Overloading
  - Misaligned drive shaft
  - Misaligned rear axle
  - High angle drive
  - Weak rear springs
  - Erratic driving and braking

### 3. Check differential for:

- a. Case breakage caused from—
  - Loose case bolts
  - Improper adjustment differential support bearings
  - Excessive ring gear and thrust block clearance
  - Erratic clutch operation
  - Vehicle overloading
- b. Scoring of pinions, caused from—
  - Insufficient lubrication
  - Improper grade of lubricant
  - Excessive loads
  - Excessive spinning of one wheel
- c. Tooth breakage, caused from—
  - Normal fatigue
  - Erratic clutch operation
  - Overloading
  - Ice-spotted pavements
- d. Side gear broken at hub caused from—
  - Misaligned axle shaft
  - Worn thrust washers
  - Excessive axle housing deflection
- e. Noisy operation caused from—
  - Insufficient lubricant
  - Unmatched ring gear and pinion
  - Worn teeth in ring gear or pinion
  - Improper ring gear and pinion adjustment
  - Loose differential side gear bearings
  - Misaligned, sprung ring gear
  - Loose differential housing bolts
  - Loose pinion bearings

### f. Loss of lubricant caused from—

- Lubricant level too high
- Damaged bearing grease retainer
- Defective rear wheel bearing gasket
- Worn axle shaft grease retainers
- Defective pinion oil seal
- Restricted lubricant return passage
- Scored, warped companion flange hub
- Cracked rear axle housing
- Too high wedges at spring seat

### g. Overheating of unit, caused from—

- Lubricant level too high
- Use of incorrect grade of lubricant
- Bearings adjusted too tightly
- Misalignment of bearings
- Insufficient ring gear to pinion gear clearance

### 4. Check rear axle for:

- a. Axle breakage resulting from—
  - Normal fatigue
  - Grabbing clutch
  - Use of emergency brake to stop
  - Excessive speeds, rough roads
  - Misaligned axle shaft housing
  - Vehicle overloading
  - Improperly adjusted wheel bearings
- b. Noisy operation, resulting from—
  - Bent, sprung axle shaft
  - Misaligned axle shaft housing
  - Wear in axle shaft housing sleeve
  - End play in pinion shaft bearings
  - Excessive gear lash
  - Improper adjustment pinion shaft bearings
  - Loose pinion companion flange
  - Scuffed gear tooth surfaces
  - Improper bearing adjustment

### 5. Check rear wheels for noise due to:

- Wheel loose on axle shaft taper
- Worn wheel or axle shaft keyways
- Wheel hub or drum studs loose
- Axle shaft rubbing wheel bearing retainer
- Insufficient bearing lubrication
- Scored wheel bearing cup or cone
- Defective, brinelled wheel bearings
- Excessive axle shaft end play

## Steering

### 1. Check for hard steering conditions caused by:

- Insufficient lubrication
- Underinflation
- Tight steering assembly
- Worn steering gear
- Too much caster
- Excessive, positive or negative camber
- Bent, worn king pin
- Sprung spindle
- Sagging, broken spring
- Broken frame

### 2. Check for loose steering conditions caused by:

- Worn steering linkage
- Weak springs in drag link
- Worn sector shaft bushing
- Worn tie rod ends
- Improper steering adjustment
- Worn king pins, bushings

### 3. Check for wander or weave caused by:

- Unequal tire pressure
- Sagging, broken springs
- Loose spring shackles
- Worn front wheel bearings
- Tight steering assembly
- Worn king pins, bushings
- Incorrect toe-in adjustment
- Insufficient caster
- Loose U-bolts
- Bent, broken frame
- Overloading

### 4. Check for low speed shimmy caused by:

- Too much caster
- Loose king pins
- Loose drag link arm
- Loose steering gear
- Misaligned drag link
- Worn tie rod ends
- Loose wheel bearings
- Sagging, broken springs

### 5. Check for high speed shimmy caused by:

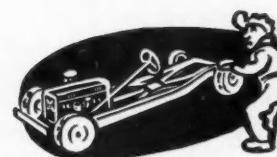
- Underinflation-front tires
- Unequal inflation
- Loose engine mounting
- Worn rear wheel bearings
- Worn universal joint
- Whipping propeller shaft
- Wheel or tire wobble
- Out-of-balance wheels
- Eccentric tires
- Broken, sagging springs
- Worn shock absorbers

### 6. Check for road shock caused by:

- Unequal caster
- Excessive caster
- Sprung front axle
- Bent steering arm
- Bent drag link
- Weak springs
- Improper tire size
- Defective shock absorbers

### 7. Check for side pull caused by:

- Unequal caster
- Tight king pins
- Unmatched tires
- Uneven inflation
- One weak rear spring
- Sagging front springs
- Bent steering knuckle
- Bent, broken frame
- Uneven braking



## Tire Wear

### 1. Check tire factors causing premature tire wear:

- Underinflation
- Overinflation
- "Bleeding" hot tires
- Undersize tires for load
- Neglected cuts and bruises
- Duals mismatched for size
- Duals-improper spacing
- Duals mismatched for type of cord
- Improper matching of inflation pressure in duals
- Wrong type tire for job

### 2. Check vehicle factors causing premature tire wear:

- Overloading
- Improper loading
- Excess overhang loads
- Wheel misalignment
- Wheels out of balance
- Grabbing brakes
- Unequalized brakes
- Sprung or sagging axles
- Sprung frame
- Worn wheel bearings
- Loose "U" bolts
- Worn or loose wheel bearings
- Bent rims
- Broken springs
- Improper placement of tandem axles

### 3. Check driving habits causing premature tire wear:

- Quick starts and stops
- Curb scraping and bumping
- Excessive speed
- "Squealing" tires on curves
- Running over rocks
- Parking on oily floors
- Riding edge of pavement with soft, low shoulders
- Improper brake application
- "Spinning" tires in mud, slush

### 4. Check road conditions causing premature tire wear:

- Abrasive road surfaces
- Rutted roads
- Highly crowned roads

### 5. Check other factors causing premature tire wear:

- Atmospheric conditions
- Storing tires exposed to sun
- Storing tires exposed to oil
- Failure to switch tires
- Wrong size flap used
- Loose tire chains
- Foreign objects between duals

# COMPONENT PARTS

For additional truck data see Specifications Table, Page 139; Bus Specifications Page 136

## • KEY TO ABBREVIATIONS AND REFERENCES •

### FOOTNOTES

- (1) Shuler and Eaton
- (2) Timken and Eaton
- (3) Shuler and Timken or Eaton
- (4) Shuler and Timken
- (5) Integral with carburetor
- (6) Loadmaster engine available as optional equipment
- (7) Delco - Remy distributor, Bosch magneto, on off-highway units; others, Delco-Remy
- (8) Delco-Remy starter, Electric Auto-Lite generator
- (9) Auto-Lite generator, Leete-Neville starter
- (10) Ensign KGNL or Zen. 63-AW-16
- (11) DeLuxe and Cuno
- (12) Any of these engines optional on any model
- (13) Continental, Hercules, Hall-Scott and Buda engines available in certain Sterling chassis
- (14) Integral with motor
- (15) Starter, D-R; Generator, AL
- (16) Warner or Clark

### MAKES OF UNITS

- A-B—American Bosch Corp.  
AL—Electric Auto-Lite Co.  
AM—Air Maze Corp.  
AmC—American Chain & Cable Co.  
AOS—A. O. Smith Co.  
Aub—Auburn Clutch Company  
A-W—Auto-Lite or Willard

- B&B—Borg & Beck Div.  
BD—Budd or Dayton  
B-D-M—Budd, Dayton or Motor Wheel  
Bdd—Budd Wheel Company  
Ben—Bendix Products Div.  
B-K—Budd or Kelsey Hayes  
Bla—Blackstone Corp.  
Bid—Blood Bros. Machine Co.  
B-L—Brown Lipe (Spicer Mfg. Div.)  
B-M—Budd or Motor Wheel  
Bos—American Bosch Corp.  
Bud—Buda Co.  
BW—Bendix Westinghouse  
Car—Carter Carburetor Corp.  
C-B—Clark or Budd  
Cla—Clark Equipment Co.  
Con—Continental Motors Corp.  
CS—Cleveland Steel Products Co.  
Cum—Cummins Engine Co.  
Day—Dayton Steel Foundry Co.  
DD—Detroit Diesel  
DeL—DeLuxe Products Corp.  
Det—Detroit Steel Products Co.  
Dol—Dollinger Corp.  
Don—Donaldson Co.  
D-M—Dayton or Motor Wheel  
D-R—Delco-Remy Div.  
Eat—Eaton Mfg. Co.  
Ens—Ensign Carburetor Co.  
Eri—Erie Malleable Iron Co.  
Exi—Exide (Elec. Storage Battery Co.)  
Fed—Feeders-Quigan Corp.  
Fr—Ford Motor Co.  
Ful—Fuller Mfg. Co.

- Gem—Gemmer Mfg. Co.  
Gl—Globe-Union, Inc.  
GO—G & O Mfg. Co.  
G-H—Goodyear-Hoover  
Han—Handy (King Seeley Corp.)  
Har—Harrison Radiator Div.  
Her—Hercules Motor Corp.  
HoF—Hoof Products Co.  
H-S—Hall-Scott Motor Car Co.  
Inl—Inland Mfg. Div.  
Jms—Jamestown Metal Equipment Co.  
KHM—Kelsey Hayes or Motor Wheel  
K-S—King Seeley Corp.  
Li—Liggett  
L-N—Leete Neville Corp.  
Lng—Long Mfg. Div.  
L-R—Lipe Rollway Corp.  
Lub—Luber-Finer, Inc.  
Mal—Mallory Electric Corp.  
Mar—Maremont Auto. Prod., Inc.  
Mat—Mather Spring Co.  
McC—McColl Radiator & Mfg. Co.  
Mic—Michigan Products Corp.  
Mid—Midland Steel Products Co.  
Mod—Modine Mfg. Co.  
Mur—Murray Corp. of America  
MW—Motor Wheel Corp.  
Nat—National Battery Co.  
NEP—New England Products  
NP—New Process Gear  
Nug—Wm. W. Nugent Co.  
Oak—Oakes North Chicago Div.  
Par—Parish (Spicer Mfg. Div.)  
Pce—Pierce Governor Co.

- Pfx—Perfex Corp.  
P-G—Perfex or General Interchangeable  
Pur—Purolator Products, Inc.  
Ro—Ross Gear & Tool Co.  
Roc—Rockford Clutch Div.  
RP—Rochester Products  
Sag—Saginaw Steering Gear Div.  
Ser—Service Spring Co.  
Sol—Solar  
Spi—Spicer Mfg. Div.  
SS—Standard Steel Spring Co.  
Til—Tillotson Mfg. Co.  
Tim—Timken-Detroit Axle Co.  
T-S—Tru-Stop (Amer. Chain & Cable)  
Tut—Tuthill Spring Co.  
Uni—United Air Cleaner Div.  
UP—Universal Products Co.  
US—United States Spring & Bumper Co.  
Var—Various  
Vor—Vortex Mfg. Co.  
War—Warner Gear Div.  
Wau—Waukesha Motor Co.  
WCL—W. C. Lipe (Lipe Rollway Corp.)  
WGB—W-G-B Oil Clarifier, Inc.  
Wil—Willard Storage Battery Co.  
Win—Winslow Eng. Co.  
Wys—Willys Overland Motors, Inc.  
Yng—Young Radiator Co.  
Zen—Zenith Carburetor Div.  
†—Core only ‡—Spicer 002068.  
\*A.C. Mech. and Autopulse Dual  
\*\*—Own-front universal joint  
—Specifications same,  
Engine HRRB600

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES					ELECTRICAL EQUIPMENT					UNIVER- SALS	RUNNING GEAR								
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR	Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator Make	Battery—Make		STEER- ING GEAR	Make and Model Number	Hand Brakes Make	Brake Drum Make	Wheels—Make	Springs— Make		
1 BROCKWAY 1 88WH.....	Con 38B	....	Uni	....	Zen 63A12	AC	GO	AL	AL	Exi	LR 13 in.	Spl 1410	Ro TA14	War	Tim	Bdd	Est	Par			
2 128W.....	Con 40B	....	Uni	....	Zen 63A14	AC	GO	AL	AL	Exi	LR 13 in.	Spl 1410	Ro TA14	TS	Tim	Bdd	Eat	Par			
3 146W.....	Con 40B	KS	Uni	WGB	Zen 63A14	AC	GO	AL	AL	Exi	LR 13 in.	Spl 1500	Ro TA66	TS	Tim	Bdd	Eat	Par			
4 148W.....	Con 42BX	KS	Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spl 1500	Ro 151W-TA66	TS	Tim	Bdd	Eat	Par			
5 151W, 153W.....	Con 42BX	KS	Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spl 1500	Ro TA71	TS	4	Bdd	Eat	Par			
6 152W.....	Con 42BX	....	Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spl 1500	Ro TA71	TS	(1)	Bdd	Eat	Par			
7 154W(T).....	Con 42BX	....	Uni	WGB	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spl 1500	Ro TA66	TS	(2)	Bdd	Eat	Par			
8 154W(H(T)).....	Con 46B	....	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spl 1500	Ro TA66	TS	(2)	Bdd	Eat	Par			
9 240XW.....	Con 46B	....	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 15 in.	Spl 1500	Ro TA71	TS	(1)	Jdd	Eat	Par			
10 260XW.....	Con 46B	....	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 15 in.	Spl 1600	Ro TA71	TS	(3)	Bdd	Eat	Par			
11 260XL.....	Con 46B	....	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spl 1600	Ro TA71	TS	Tim	Bdd	Eat	Par			
12 260XWL.....	Con 48B	....	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 15 in.	Spl 1600	Ro TA71	TS	Tim	Bdd	Eat	Par			
13 BROWN 122RT.....	Con 22R	Pco	AM	Con	Zen SF5	*	Pfx	DR	DR	Exi	LR 15ML-310‡	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par			
14 R6513T.....	Con 6513	(14)	AM	Con	Zen 63AW16	*	Pfx	DR	DR	Exi	LR 15ML-310‡	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par			
15 R6572TC-TM, R6572TJ.....	Con 6572	(14)	AM	Con	Zen 63AW16	*	PG	DR	DR	Exi	LR 15ML-295‡	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par			
16 140GKT.....	Wau 140GK	(14)	AM	Con	Zen 63AW16	*	PG	DR	AL	DR	AL	LR 15ML-295‡	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par		
17 HB600TJD.....	Cum HB600	(14)	Cum	Lub	.....	Cum PG	.....	DR	AL	DR	AL	LR 15ML-301	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par		
18 HRB 600TJD, HRBB600 TJD.....	Cum HRB600	(14)	Cum	Lub	.....	Cum PG	.....	DR	AL	DR	AL	LR 15ML-326	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par		
19 NHB600TJD.....	Cum NHB600	(14)	Cum	Lub	.....	Cum PG	.....	DR	AL	DR	AL	LR 15ML-326	Spl 1200	Ro TA71	Own	Eri	Eri	Mat	Par		
20 CHEVROLET HP, HR, HS.....	O-T/Master	AC	....	RP-7002050	AC	Har	DR	DR	DR	Inl	.....	Spi ***	Sag	....	Own	BK	Own	Own			
21 TJ, TU.....	O-L/Master	AC	....	Car-BB1-7455	AC	Har	DR	DR	DR	Inl	.....	Spi **	Sag	....	Own	BK	Own	Own			
22 TL.....	O-T/Master (5)	AC	....	RP-7002050	AC	Har	DR	DR	DR	Inl	.....	Spi **	Sag	....	Own	BK	Own	Own			
23 TS.....	O-T/Master (6)	Han	AC	....	RP-7002050	AC	Har	DR	DR	DR	Inl	.....	Spi	Sag	....	Own	BK	Own	Own		
24 TP(S), TR(S), TS(S), TV(S), TW(S), TX.....	O-L/Master	Han	AC	....	Car-BB1-7455	AC	Har	DR	DR	DR	Inl	.....	Spi	Sag	....	Own	BK	Own	Own		
25 D202.....	O-L/Master	Han	AC	....	RP-7002051	AC	Har	DR	DR	DR	Inl	.....	Spi	Sag	....	Own	BK	Own	Own		
26 CORBITT G101.....	Con-M6330	Zen	Uni	Fram	Zen-63AW12R	AC	Pfx	DR	DR	Exi	LR-Z30S	Spl-1500	Ro-TA66	Cla	Day	Day	Mar	Par			
27 G301.....	Con-B6371	Zen	Uni	Con	Zen-29W12R	AC	Pfx	DR	DR	Exi	LR-Z30S	Spl-1600	Ro-TA66	Ful	Day	Day	Mar	Par			
28 G302.....	Con-B8427	Zen	Uni	Con	Zen-29-14R	AC	Pfx	DR	DR	Exi	LR-Z31S	Spl-1600	Ro-TA66	Ful	Day	Day	Mar	Par			
29 G402.....	Con-T8427	Mal	Uni	Con	Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z31S	Spl-1600	Ro-TA66	Ful	Day	Day	Mar	Par			
30 G601.....	Con-R6513	Con	Uni	Mic	Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z42S	Spl-1700	Ro-TA70	Own	Day	Day	Mar	Par			
31 G602.....	Con-R6572	Con	Uni	Mic	Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z42S	Spl-1700	Ro-TA70	Own	Day	Day	Mar	Par			
32 G603.....	Con-R6602	Con	Uni	Mic	Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z40SX	Spl-1700	Ro-TA70	AmC	Day	Day	Mar	Par			
33 D202.....	Her-DJXH	Her	AM	Pur	.....	AB	Pfx	DR	DR	Exi	LR-Z30S	Spl-1500	Ro-TA66	Cla	Day	Day	Mar	Par			
34 D401, D402 Eng., Her-DWXLD	Her-DWXLD	Her	AM	Pur	.....	AB	Pfx	DR	DR	Exi	LR-Z31S	Spl-1600	Ro-TA66	Ful	Day	Day	Mar	Par			
35 D601.....	Her-DRXC	Her	AM	Pur	.....	AB	Pfx	DR	DR	Exi	LR-Z42S	Spl-1700	Ro-TA70	Own	Day	Day	Mar	Par			
36 D801.....	Cum-HB600	Cum	Uni	Del	.....	Cum Pfx	.....	DR	DR	Exi	LR-Z40SX	Spl-1700	Ro-TA71	AmC	Day	Day	Mar	Par			
37 D802.....	Cum-HRB600	Cum	Uni	Lub	.....	Cum Pfx	.....	DR	DR	Exi	LR-Z40SX	Spl-1700	Ro-TA71	AmC	Day	Day	Mar	Par			

# **A Compilation of Standard Model Data Submitted by Truck Manufacturers**

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES							ELECTRICAL EQUIPMENT			RUNNING GEAR											
		ENGINE	Governor Make— (If Standard)		Air Cleaner Make (If Standard)		Oil Filter Make (If Standard)		CARBU- RETOR Make and Model Number	Fuel Feed System Make and Model Number	Radiator Make	Ignition System Make		Generator—Starter Make		CLUTCH Make and Model Number	UNIVERS- ALS Make and Model Number	STEERING GEAR		WHEELS			
			Make and Model	Uni	Uni	Lub	Uni	Uni		Pfx	Cum	DR	Exi	DR	Exi			Make and Model Number	Make and Model Number	Hand Brakes Make of Actuation	Brake Drum Make	Wheels—Make	
38	CORBITT—(Cont.)																						
38	D803	Cum-NHB600	Cum	Uni	Lub				Cum	Pfx		DR	Exi	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA71	AmC	Day	Day	Mar	Par
39	D808	Cum-HRBB600	Cum	Uni	Lub				Cum	Pfx		DR	Exi	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA71	AmC	Day	Day	Mar	Par
40	CROSLEY	Pickup Truck, Panel Delivery	Own		Uni	Fram	Til	DY-9C	AC	Yng	AL	AL	Sol	Cla1269-5A	Roc	Nep 6001	Ro S12	GH	Own	MW	Mat	Own	
41	DIAMOND T																						
42	201, 306.	Her QXLD		Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	10A7	Spi	1350	Ro660	War	Var	Cla	Own	Own		
42	222, 322.	Her QXLD	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1350	Ro-TA14	War	Var	Cla	Own	Own		
43	404, 509SC	Her JXB	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA26	War	Var	Cla	Own	Own		
44	404SC.	Her JXE	KS	Uni	Fram	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA21	War	Var	Cla	Own	Own		
45	420.	Her JXB	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA21	War	Var	Cla	Own	Own		
46	420.	Her JXC	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA21	War	Var	Gun	Own	Own		
47	420.	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12E	Spi	1410	Ro-TA21	(16)	Var	Gun	Own	Own		
48	509.	Her JXC-JXD	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA26	War	Var	Gun	Own	Own		
49	509SCH.	Her JXC	KS	Uni	Fram	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA26	Cla	Var	CB	Own	Own		
50	520.	Her JXC	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B	11A6	Spi	1410	Ro-TA21	War	Var	Gun	Own	Own		
51	520.	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12E	Spi	1410	Ro-TA21	Cla	Var	Gun	Own	Own		
52	520.	Her JXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA21	Cla	Var	Day	Own	Own		
53	614.	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA21	Cla	Var	CB	Own	Own		
54	614.	Her JXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA26	Cla	Var	Day	Own	Own		
55	614SC.	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12E	Spi	1500	Ro-TA26	Cla	Var	Day	Own	Own		
56	614SC.	Her JXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA26	Cla	Var	Gun	Own	Own		
57	620.	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA26	Cla	Var	Gun	Own	Own		
58	620.	Her JXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA26	Cla	Var	Gun	Own	Own		
59	650T.	Cont T6427	KS	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	12ML	Spi	1500	Ro-TA26	Cla	Var	Day	Own	Own		
60	702A.	Her WXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	14TT	Spi	1600	Ro-TA66	TS	Var	Gun	Own	Own		
61	703.	Con T6427	KS	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	14TT	Spi	1600	Ro-TA66	TS	Var	CB	Own	Own		
62	704.	Her TDXB	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	14ML	Spi	1600	Ro-TA66	TS	Var	CB	Own	Own		
63	806A.	Her WXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	14TT	Spi	1600	Ro-TA66	TS	Var	CB	Own	Own		
64	809.	Con T6427	KS	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	14TT	Spi	1600	Ro-TA66	TS	Var	CB	Own	Own		
65	901.	Con T6572	Con	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B	15TT	Spi	1600	Ro-TA71	TS	Var	CB	Own	Own		
66	910N.	Cum-HB600	AB	Uni			AB	Own		DR	AL	DR	AL	Spi 14 in.	Spi 1700	Ro-TA71	TS	Var	CB	Own	Own		
67	910N.	Cum-NHB600	AB	Uni			AB	Own		DR	AL	DR	AL	Spi 14 in.	Spi 1700	Ro-TA71	TS	Var	Day	Own	Own		
68	910R.	Cum-HRB600	AB	Uni			AB	Own		DR	AL	DR	AL	Spi 14 in.	Spi 1700	Ro-TA71	TS	Var	CB	Own	Own		
69	DART																						
70	100.	Wau 140GK		Don	Fram	Zen	29W14S	AC	Own	DR	DR	DR	DR	Wil	LR 140-1-295	Spi 1600	Ro TA71	AmC	Tim	Bdd	Tut	Own	
71	110.	DD 6094	Vor													LR 150-1-150	Spi 1700	Ro TA71	AmC	Tim	Bdd	Tut	Own
71	140.	Her DFXH	Don	Pur												LR 170-1-264	Spi 1800	Ro T74	AmC	Tim	Bdd	Tut	Own
72	200/3010.	Wau 140GK	Don	Fram	Zen	29W14S	AC	Own	DR	DR	DR	DR	DR	Wil	LR 140-1-295	Spi 1600	Ro TA71	AmC	Tim	Bdd	Tut	Own	
73	200/456.	Wau 140GK	Don	Fram	Zen	29W14S	AC	Own	DR	DR	DR	DR	DR	Wil	LR 140-1-295	Spi 1700	Ro TW74	AmC	Tim	Bdd	Tut	Own	
74	250/462.	Wau 145GK	Don	Fram	Zen	29W14S	AC	Own	DR	DR	DR	DR	DR	Wil	LR 150-1-150	Spi 1700	Ro T74	AmC	Tim	Bdd	Tut	Own	
75	250/472.	Her DFXH	Vor	Pur												LR 170-1-264	Spi 1800	Ro T74	AmC	Tim	Bdd	Tut	Own
76	DODGE																						
77	B-1-DU.	Own 230		Uni			Str 3-100	AC	Bla	AL	AL	AL	AL	B&B	11825	UP 5160	Gem 305	Own	Bdd	Det	Aos		
77	B-1-EU..	Own 230		Uni			Str 3-100	AC	Bla	AL	AL	AL	AL	B&B	11830	UP 5160	Gem B-60	Own	Bdd	Det	Aos		
78	B-2-B..	Own 218		Uni			Car DTE-1	AC	Bla	AL	AL	AL	AL	B&B	11826	Spi 1260	Gem 305	Own	Bdd	Det	Mut		
79	B-2-C..	Own 218		Uni			Car DTE-1	AC	Bla	AL	AL	AL	AL	B&B	11826	Spi 1260	Gem 305	Own	Bdd	Det	Mut		
80	B-2-D..	Own 230		Uni			Str 3-100	AC	Bla	AL	AL	AL	AL	B&B	11826	Spi 1260	Gem 305	Own	Bdd	Det	Mut		
81	B-2-F, B-2-G..	Own 237		Uni			Car E7-T1	AC	Fed	AL	AL	AL	AL	B&B	11827	CS 096	Gem B60	Own	Bdd	Det	Mut		
82	B-2-GM..	Own 237		Uni			Car 6N1	AC	Fed	AL	AL	AL	AL	B&B	11827	CS 096	Gem B60	Own	Bdd	Det	Mut		
83	B-2-H.. B-2-HH..	Own 237		Uni			Car 6N1	AC	Fed	AL	AL	AL	AL	B&B	11830	CS 096	Gem B60	Own	Bdd	Det	Mut		
84	B-2-HM.. B-2-HHM..	Own 237		Uni			Car E7-T1	AC	Fed	AL	AL	AL	AL	B&B	11830	CS 096	Gem B60	Own	Bdd	Det	Mut		
85	B-2-J.. B-2-K..	Own 251		Uni			Car 6N1	AC	Fed	AL	AL	AL	AL	B&B	11830	UP 5370	Gem B60	Own	Bdd	Det	Mut		
86	B-2-JM.. B-2-KM..	Own 251		Uni			Car 6N1	AC	Fed	AL	AL	AL	AL	B&B	11830	UP 5370	Gem B60	Own	Bdd	Det	Mut		
87	B-2-PW..	Own 251		Uni			(5) AC	Pur	Car	E7-S1	AC	Fed	AL	AL	B&B	11828	UP 5370	Gem B60	Own	Bdd	Det	Mut	
88	B-2-R..	Own 306		Uni			Car E7-T1	AC	Bla	AL	AL	AL	AL	B&B	11575	CS D96	Gem B60	Own	Bdd	Det	Mut		
89	B-2-T, B-2-V..	Own 331		Uni			Car E7-T1	AC	Bla	AL	AL	AL	AL	B&B	11581	CS U96	Ross TA26	Own	Tim	Bdd	Det	Mut	
90	B-2-Y..	Own 377		Uni			Car E7-U1	AC	Bla	AL	AL	AL	AL	B&B	11733	CS 996	Ross TA66	Own	Tim	Bdd	Det	Mut	
91	DUPLEX																						
92	TH.	Her JXD					Zen 2BAV11	AC	Own	AL	AL	AL	AL	B&B	13 in.	Spi 1500	Ful TA27072		Tim	MW	Tut	Own	
93	TH339.	Her JXLD					Zen 29W14	AC	Own	AL	AL	AL	AL	B&B	13 in.	Spi 1500	Ful TA27121		Tim	MW	Tut	Own	
93	RH.	Her WXLc3					Zen 2BAV12	AC	Own	AL	AL	AL	AL	B&B	13 in.	Spi 1600	Ful TA67061		Tim	MW	Tut	Own	
94	KH, JH..	Her RXC					Zen IN167SJ	AC	Own	AL	AL	AL	AL	B&B	14 in.	Spi 1600	Ful TA72243		Tim	MW	Tut	Own	
95	SH501.	Her RXB					Zen IN167SJ	AC	Own	AL	AL	AL	AL	B&B	14 in.	Spi 1600	Ful TA72243		Tim	MW	Tut	Own	
96	LH..	Her RXLD					Zen IN167SJ	AC	Own	AL	AL	AL	AL	LR	15 in.	Spi 1700	Ful TA72152		Tim	MW	Tut	Own	
97	LHS6..	HS 400					Zen 1510MVM2	AC	Own	DR	DR	DR	DR	LR	15 in.	Spi 1700	Ful TA72152		Tim	MW	Tut	Own	
98	LHS6..	HS 480					Zen 1510MVM2	AC	Own	DR	DR	DR	DR	LR	15 in.	Spi 1700	Ful TA72152		Tim	MW	Tut	Own	
99	FEDERAL																						
100	16M Series..	Her JXF		Uni	Pur	Car	AC	Lng	DR	DR	AL	AL	B&B	11 in.	Spi 1300	Gem 335		BD	Det	Par			
101	18M Series..	Her JXF		Uni	Pur	Car	AC	Lng	DR	DR	AL	AL	B&B	12 in.	Spi 1300	Gem 335		BD	Det	Par			
102	25M Series..	Her JXF		K-S	Don	Fram	AC	Lng	DR	DR	AL	AL	B&B	12 in.	Spi 1400	Gem 335		BD	Det	Par			
103	29M.. Series..	Her JXLDf		K-S	Don	Fram	AC	L															

# COMPONENT PARTS

Continued from Page 113

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES								ELECTRICAL EQUIPMENT				CLUTCH	UNIVERSALS	RUNNING GEAR								
		ENGINE Make and Model	Governor Make— (If Standard)		Air Cleaner Make (If Standard)		CARBU- RETOR Make and Model Number		Fuel Feed System Make		Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make	STEERING GEAR	Make and Model Number	Hand Brakes Brake Drum Make	Wheels—Make	Springs—Make	Frame—Make				
			Make	Model	Make	Model	Make	Model	Make	Model														
111	FEDERAL—(Cont.) 645M Series	Con T6427F	KS Con	Don	Mic	Zen	Zen	AC AC	Lng Lng	DR DR	Exi Exi	L-R 14 in.	Bld 1600	Gem 400	TS	BD	BD	Det	Par					
112	663M, 664M Series	Con R6602	KS Con	Don	Mic	Zen	Zen	AC AC	Lng Lng	DR DR	Exi Exi	L-R 15 in.	Bld 1700	Gem 500	.....	.....	.....	.....	.....	.....	.....	.....	.....	
113	FORD F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8	Own	Own	Own	Own	Own	Own	Own Own	Own Own	Own Own	Own Own	Own Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
114	FREIGHTLINER A-64, B-42 (Engine, HRB600)	Cum NHB600	.....	Vor	Lub	.....	.....	Own	Own	Own	Own	Own	Own	Spi 1700	Gem 500	TS	Own	Own	Own	Own	Own	Own	Own	
116	FWD H6X8	Wau, MZA	Wau	Don	Mic	Zen IN167SJ	AC	Own	DR DR	Wil	Own LR-H14	Bld 5N	Ro TA66	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
117	HA	Wau, BZ	Wau	AM	Mic	Zen 29BU16	AC	Own	DR DR	Wil	Own LRH	Bld 5N	Ro TA66	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
118	HG, HR, HRT	Wau, BZA	Wau	AM	Mic	Zen IN167SJ	AC	Own	DR DR	Wil	Own LR-H14	Bld 5N	Ro TA66	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
119	LD	Her QXL03	Uni	.....	.....	Car BBR-769S	AC	Own	DR DR	Wil	B-B11A6	Spi 1410	Ro TA14	Own	Tim	Bdd	Own	Own	Own	Own	Own	Own	Own	
120	M6X6	Wau, 145GK	Wau	AM	Mic	Zen W16	AC	Own	DR DR	Wil	Own LR-M15	Bld 7N	Ro P720	AmC	Tim	Bdd	Own	Own	Own	Own	Own	Own	Own	
121	M6X8D	Bud 844	DeL	Don	DeL	.....	.....	Bud	Own	DR DR	Wil	Own LR-M15	Bld 7N	Ro P720	Own	Tim	Bdd	Own	Own	Own	Own	Own	Own	
122	M7, M10	Wau 145GK	Wau	AM	Mic	Zen W16	AC	Own	DR DR	Wil	Own LR-M14	Bld 7N	Ro P720	Own	Tim	Bdd	Own	Own	Own	Own	Own	Own	Own	
123	M7D, M10D	Bud 844	DeL	Don	DeL	.....	.....	AC	Own	DR DR	Wil	Own M15	Bld 6N	Ro TW74	Own	Own	Own	Own	Own	Own	Own	Own	Own	
124	MU6X6	Wau 145GK	Wau	AM	Mic	Zen IN167SJ	AC	Own	DR DR	Wil	Own LR-U14	Bld 6N	Ro TW74	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
125	SU	Wau SRKR	Wau	Don	Mic	Zen 29-14	AC	Own	DR DR	Wil	Own LR-U15	Bld 6N	Ro TW74	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
126	YU	Wau 140GK	Wau	Don	Mic	Zen 29-16	AC	Own	DR DR	Wil	Own LR-U15	Bld 5N	Ro TW74	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
127	ZU	Wau 140GZ	Wau	Don	Mic	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
128	KENWORTH 521, 522, 523, 524, 548, 552, 584, 825	Cum HB600	Cum	Don	Cum	Zen 29W16	Cum	Pfx	DR	Exi	B-L 14 Sngl.	Spi 1700	Gem 500	T-S	Tim	Bdd	Own	Own	Own	Own	Own	Own	Own	
129	585, 829	Wau 140GZB	Wau	Don	Mic	.....	AC	Pfx	DR	Exi	B-L 14 Sngl.	Spi 1700	Gem 500	T-S	Tim	Bdd	Own	Own	Own	Own	Own	Own	Own	
130	889	Cum-NHB600	Cum	Don	Cum	.....	Cum	Pfx	DR	Exi	B-L 14 Sngl.	Spi 1700	Gem 500	T-S	Tim	Bdd	Own	Own	Own	Own	Own	Own	Own	
131	LINN Linn L2, L4	Her OXC3	.....	Dol	.....	Zen 63AW10	AC	GO	AL AL	AL AL	LR 12ML	UP	Sag 630-061	NP	Eri	Bdd	Tut	Own	Own	Own	Own	Own	Own	
132	Linn L6, L8	Her JXE3	Hof	Dol	.....	Zen 63AW10	AC	GO	AL AL	AL AL	LR 12ML	UP	Sag 630-061	NP	Eri	Bdd	Tut	Own	Own	Own	Own	Own	Own	
133	Linn A15, A25	Her JXE3	Hof	Dol	.....	Zen 63AW10	AC	Yng	AL AL	AL AL	LR 12ML	UP 5360	Ro TA26	NP	Eri	Bdd	Tut	Li	Li	Own	Own	Own	Own	
134	Linn A35, A45	Her JXC	Hof	Dol	.....	Zen 63AW10	AC	Yng	AL AL	AL AL	LR 12ML	UP 5360	Ro TA26	NP	Eri	Bdd	Tut	Li	Li	Own	Own	Own	Own	
135	MARMON-HERRINGTON DVL4	Wya CJ-2A	Hof	Uni	Fram	Car 596S	AC	Yng	AL	DR	DR	B&B	Spi 1350	Ro TA15030	Own	Own	Bdd	Ser	Fr	Fr	Fr	Fr	Fr	
136	LD7, R3, R4, R5, R6, R8-6, R8-6	Frd 8RT (239)	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Frd	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
137	Q5, Q6, Q5-6, Q6-6	Frd 8EQ (337)	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Frd	Ro TA71	AmC	Tim	Bdd	SS	SS	SS	SS	SS	SS	SS	
138	MH440-4, MH440-6	Her WXLC3	KS	Don	Mic	Zen 28	AC	Yng	DR DR	AL	BL Z32S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	SS	SS	SS	SS	SS	SS	
139	MH555-4, MH555-6	Her RXC	KS	Don	Mic	Zen 29	AC	Yng	DR DR	AL	BL Z31S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	SS	SS	SS	SS	SS	SS	
140	MH-RH	Her-RXLDH	Pee	Don	Mic	Zen 29W16	AC	Yng	DR DR	AL	BL Z31S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	SS	SS	SS	SS	SS	SS	
141	MH-RC	Her-RXC	Pee	Don	Mic	Zen 29W16	AC	Yng	DR DR	AL	BL Z32S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	SS	SS	SS	SS	SS	SS	
142	MILFORD QX	Wau 6MZA	Wau	AM	Mic	Zen 63AW12	AC	Pfx	DR DR	Exi	L-R 14ML	Bld 6N	Ro TA71	AmC	Tim	Bdd	Tut	Par	Par	Par	Par	Par	Par	
143	QY	Wau 140GK	Wau	Vor	Mic	Zen 63AW16	AC	Pfx	DR DR	Exi	L-R 15ML	Bld 6N	Ro TA71	AmC	Tim	Bdd	Tut	Par	Par	Par	Par	Par	Par	
144	OSHKOSH W212	Her JXLD	Pce	Don	Mic	Zen 29AW14	AC	Yng	DR	AL	Wil	LR 13SP	Spi 1500	Ro TA66	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
145	W312	Her WXLC03	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	AL	Wil	LR 14SP	Spi 1500	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
146	W700	Her RXCO	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	AL	DR	Wil	Spi 1600	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
147	W703, W705	Her RXLD	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	AL	DR	Wil	Spi 1600	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
148	W703D	Her RXDC	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	AL	DR	Wil	Spi 1600	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
149	W703-6X6	Her RXLD	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	AL	DR	Wil	Spi 16, 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
150	W712	Her RXLDH	Pce	Don	Mic	Zen 29D13	AC	Pfx	DR	AL	DR	Wil	Spi 1500	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
151	W906	Cum HB600	Cum	Don	Cum	Zen 29D13	Cum	Pfx	DR	AL	DR	Wil	Spi 1500	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
152	W906R	Cum HRB600	Cum	Don	AM	Zen 29D13	Cum	Pfx	DR	AL	DR	Wil	Spi 1500	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
153	W1600BD	Bud 6DC844	Bos	Don	DeL	.....	.....	Bos	Pfx	DR	AL	Wil	Spi 17, 1800	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
154	W1600BG	Bud 6MO893	Bos	Don	DeL	.....	.....	Bos	Pfx	DR	AL	Wil	Spi 17, 1800	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
155	W1600CD	Cum HB600	Cum	Don	Cum	.....	.....	Cum	Pfx	DR	AL	Wil	Spi 17, 1800	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
156	W1700	Her RXC	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	AL	DR	Wil	Spi 1600	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
157	W2200	Bud 6MO779	Pce	Don	DeL	Zen 63AW16	AC	Pfx	DR	AL	DR	Wil	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
158	W2201	Bud 6MO893	Pce	Don	DeL	Zen 63AW16	AC	Pfx	DR	AL	DR	Wil	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
159	W2204	Bud 6DC844	Bos	Don	DeL	.....	.....	Bos	Pfx	DR	AL	Wil	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
160	W2205	Bud 6DCS844	Bos	Don	(11)	.....	.....	Bos	Pfx	DR	AL	Wil	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
161	W2206	HS 400	HS	Don	HS	Zen 1510MW12	AC	Pfx	DR	(9)	Wil	LR 15P2	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par	
162	W2208	Cum NHB600	Cum	Don	AM	Zen 1510MW12	Cum	Pfx	DR	Wil	LR 15P2	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par		
163	W2209	Cum NHRBS600	Cum	Don	AM	Zen 1510MW12	Cum	Pfx	DR	Wil	LR 15P2	Spi 1700	Ro TA71	Own	Bdd	Tut	Par	Par	Par	Par	Par	Par		
164	PETERBILT 280, 350, 360, 370, 380	Cum HB600	Cum	Don	Cum	.....	.....	Cum	Pfx	DR	DR	BL 13, 14DP	Spi 1700	Ro TA71	TS	Tim	Bdd	US	Par	Par	Par	Par	Par	Par
165	390	Cum HB600	Cum	Don	Cum	.....	.....	Cum	Pfx	DR	DR	BL 13, 14DP	Spi 17, 1800	Ro TA71	TS	Tim	Bdd	US						

## TRAILER REGISTRATIONS

1948-1949

State	House or Tourist	Com- mercial	1949		1948	
			Total—All Trailers	Total—All Trailers	Total—All Trailers	Total—All Trailers
Alabama		9,075	9,075	8,557	8,557	
Arizona				21,011	19,693	
Arkansas	337 (a)	17,058 (a)	17,395 (a)	26,258		
California	79,395	276,180	355,575	360,496		
Colorado			19,842	17,113		
Connecticut	13,531	5,754	19,285	19,493		
Delaware			3,705	3,041		
Dist. of Col.			1,576	1,505		
Florida	77,031	21,118	98,149	70,734		
Georgia	17,500	12,000	29,500	27,071		
Idaho			32,607	34,774		
Illinois				6,114		
Indiana	8,000	34,643	42,643	40,000		
Iowa			141,122	134,169		
Kansas			17,374	16,415		
Kentucky						
Louisiana	1,900	33,178	35,078	30,270		
Maine			18,309	17,974		
Maryland			14,000	15,336		
Massachusetts			48,138	46,417		
Michigan	15,007	215,078	230,085	228,389		
Minnesota	21,481	36,793	58,274	105,670		
Mississippi	11,371	7,238	18,609	17,451		
Missouri			82,000	79,280		
Montana			6,659	6,148		
Nebraska	4,075	7,764	11,839	10,250		
Nevada			4,229	4,405		
New Hampshire			9,466	9,248		
New Jersey			23,867	23,984		
New Mexico				5,541		
New York			105,005	105,202		
North Carolina			73,601	73,017		
North Dakota	1,732	268	2,000	1,880		
Ohio			189,976	187,650		
Oklahoma	2,017	10,884	12,881	12,014		
Oregon	10,175	11,260	21,435	19,475		
Pennsylvania			83,043	81,885		
Rhode Island			3,870	3,696		
South Carolina			11,056	10,244		
South Dakota			31,238	32,638		
Tennessee			97,041			
Texas			117,000	97,568		
Utah			1,520	1,550		
Vermont			5,955	5,558		
Virginia	21,773	10,300	32,073	30,757		
Washington			57,983	58,024		
West Virginia	7,624	1,414	9,038	8,647		
Wisconsin	4,101	9,236	13,337	12,664		
Wyoming			14,619	13,600		
Total			2,250,083	2,141,845		

(a)—Six months registration period only. Compiled by Commercial Car Journal from material secured direct from the motor vehicle commissioners of the various states.

## TRAILER PRODUCTION

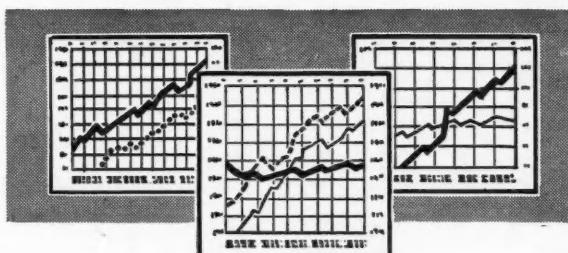
by Type, by Year\*

	Eight Months				Total
	1949†	1948	Total	1948	1947
Vans					
Insulated and Refrigerated	1,631	1,470	2,277	1,852	
Furniture	376	546	546	1,185	
All Other Closed Top	8,340	{ 11,835	18,366	18,601	
Open Top	896	1,273	2,002	1,616	
Total Vans	10,867	14,954	23,191	23,254	
Platforms					
With Cattle & Stake Racks	554	1,073	1,590	3,389	
With Grain Bodies	201	373	586	1,271	
All Other	3,435	3,279	5,330	7,915	
Total Platforms	4,190	4,725	7,506	12,555	
Tanks					
Petroleum	1,257	{ 2,219	3,176	3,019	
All Other		270	374	411	
Total Tanks	1,257	2,489	3,550	3,430	
Pole and Logging					
Single Axle	496	1,592	2,059	3,815	
Tandem Axle	466	1,269	1,605	1,541	
Total	962	2,861	3,664	5,356	
Low-bed Heavy Haulers	986	1,256	1,825	2,405	
Off-Highway		529	669	808	
Dump Trailers	268	268	2,469	{ 622	
All Other Trailers	1,355	{ 2,028	4,869	1,366	
Total Trailers	19,885	28,842	42,874	49,795	
Trailer Chassis	939	1,422	1,952	3,301	
Total—Trailers and Chassis	20,824	30,264	44,826	53,096	

\*—Industry Division, Bureau of the Census. †—Latest available data.

## SECTION 2

NINETEEN-FIFTY  
FLEET OPERATORS  
REFERENCE ANNUAL



## INDUSTRY STATISTICS

### PRODUCTION

Trailers	115
Trucks	116-117
Buses	116

### TOTAL REGISTRATIONS

Trailers	115
Trucks	119-120

### NEW REGISTRATIONS

Trucks	117-118
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### OTHER DATA

See Index	2
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## U. S. TRUCK PRODUCTION by MAKES—1947-1949

*(Official Figures Submitted by Manufacturers)*

### AUTOCAR

G. V. W.	1949	1948	1947
Over 26,000	1,458	2,823	5,098

### FORD

(U. S. Factory Sales of Trucks)		
G. V. W.	1949	1948
5,000 and less	111,210	110,818
5,001-10,000	43,358	47,520
10,001-14,000	24,501	52,551
14,001-16,000	31,528	62,556
16,001-19,500	4,114	14,446
19,501-26,000	4,008	10,735
Total	216,719	298,626
	241,047	

### BROCKWAY

1949	1948	1947
1,622	2,919	4,742

### F.W.D.

G. V. W.	1949	1948	1947
16,001-19,500	88	121	
19,501-26,000	145	385	1,310
Over 26,000	272	571	793
Total	505	1,077	2,103

### CHEVROLET

(Total Truck Production)	G. V. W.	1949	1948	1947
Under 5,000 (sedan delivery)	10,041	20,039	20,476	
Under 5,000 ( $\frac{1}{2}$ -ton)	182,663	113,446	76,940	
5,001-10,000 ( $\frac{1}{2}$ & 1-ton)	91,881	79,555	49,336	
10,001-14,000 ( $\frac{1}{2}$ -ton)	24,889	35,600	25,235	
14,001-16,000 (2-ton)	44,099	78,922	92,907	
Total for Domestic Distribution	353,373	327,582	264,894	
Total for Export	30,169	62,128	70,449	
Total Production (U. S. Plants)	383,542	389,690	335,343	

### FEDERAL

G. V. W.	1949	1948	1947
10,001-14,000	64	1,340	2,495
14,001-16,000	167	640	3,085
16,001-19,500	543	592	1,233
19,501-26,000	669	1,165	2,765
Over 26,000	206	161	480
Total	1,649	3,898	10,058

### OSHKOSH

G. V. W.	1949	1948	1947
19,501-26,000	12	27	60
Over 26,000	192	204	268
Total	204	231	328

### REO

G. V. W.	1949	1948	1947
14,001-16,000	1,198	7,833	12,041
16,001-19,500	1,804	2,583	6,784
19,501-26,000	284	420	1,516
Over 26,000	14	58	6
Total	3,300	10,894	20,349

### STUDEBAKER

1949	1948	1947
63,473	67,982	67,811

### G.M.C.

G. V. W.	1949	1948	1947
5,000 and less	39,596	24,410	14,308
5,001-10,000	20,070	16,848	10,938
10,001-14,000	8,782	20,237	18,181
14,001-16,000	7,944	13,108	5,441
16,001-19,500	3,598	11,740	5,679
19,501-26,000	1,501	3,269	3,356
Over 26,000	2,349	3,065	4,015
Total	83,840	92,677	61,918

### INTERNATIONAL

G. V. W.	1949	1948	1947
5,000 and less	18,368	26,486	24,634
5,001-10,000	38,306	41,861	38,364
10,001-14,000	1,718	39,948	40,703
14,001-16,000	33,154	18,945	18,694
16,001-19,500	10,016	19,523	17,475
19,501-26,000	6,526	15,377	9,172
Over 26,000	2,470	4,644	5,967
Total	110,558	166,784	153,009

### WHITE

1949	1948	1947	
Commercial	8,707	12,507	18,479
Export*	(1,329)	(1,135)	(2,131)
Canada	868	549	948
Bus	216	743	1,086
Total	9,791	13,799	20,513

### WILLYS

1949	1948	1947	
CJ-2A Jeeps	62,661	77,958	
CJ-3A Jeeps	31,595	309	
4-63 Panel	4,809	11,488	899
2-WD Trucks	4,139	8,859	3,734
4-WD Trucks	9,430	21,114	4,115
Total	49,973	104,631	86,706

## TRUCK FACTORY SALES by Gross Vehicle Weights\*

*Total Factory Sales from U. S. Plants*

	5,000 lbs. and less	5,001- 10,000	10,001- 16,000	16,001- 19,500	19,501- 26,000	Over 26,000	Total
1949	511,738	278,612	83,391	172,009	37,078	23,613	17,351
Per Cent of Total	51.54	24.79	7.42	15.31	3.30	2.10	1.54
1948	485,098	267,720	182,500	280,535	76,711	50,023	21,279
Per Cent of Total	35.57	19.63	13.38	20.57	5.62	3.67	1.56
1947	375,445	182,490	265,989	285,568	41,606	42,761	26,754
Per Cent of Total	30.76	14.95	21.79	23.40	3.41	3.50	2.19
1946	330,730	88,235	247,912	200,574	24,162	25,252	13,874
Per Cent of Total	35.53	9.48	26.64	21.55	2.60	2.71	1.49

### Factory Sales for Domestic Use

	1949	1948	1947	1946
Per Cent of Total	469,255	258,035	70,989	420,531
Per Cent of Total	56.17	21.06	12.93	36.17
Per Cent of Total	314,862	165,707	197,275	32.39
Per Cent of Total	291,827	78,925	182,000	39.19
Per Cent of Total	24,44	18.41	2.99	10.60

\*—Automobile Manufacturers Association.

## 46 YEARS OF TRUCK AND BUS PRODUCTION\*

*Truck and Bus Factory Sales in Units and Their Value*

Year	Units	Wholesale Value	Average Wholesale Price
1909	3,297	5,333,683	1,618
1910	6,000	9,680,000	1,610
1911	10,681	21,000,000	1,966
1912	22,000	43,000,000	1,954
1913	23,500	44,000,000	1,872
1914	24,900	44,219,096	1,776
1915	74,000	125,800,000	1,700
1916	92,130	161,000,000	1,747
1917	120,157	220,982,668	1,724
1918	227,250	434,168,992	1,910
1919	224,731	371,422,820	1,653
1920	321,789	423,249,410	1,315
1921	148,052	166,070,810	1,122
1922	269,991	226,049,658	837
1923	409,295	308,537,929	804
1924	416,659	318,580,580	765
1925	530,659	458,400,277	884
1926	516,947	452,123,435	876
1927	464,793	420,130,624	904
1928	543,324	437,132,258	804
1929	771,020	566,029,644	734
1930	571,241	389,436,690	682
1931	416,648	262,417,542	630
1932	235,187	136,193,336	579
1933	346,545	186,068,314	537
1934	575,192	320,143,667	557
1935	694,690	379,407,751	546
1936	784,587	462,820,474	590
1937	893,085	534,494,873	598
1938	488,100	334,147,530	685
1939	710,496	494,829,231	696
1940	754,901	567,820,414	752
1941	1,060,820	1,068,799,855	1,008
1942	819,662	1,427,456,801	1,744
1943	699,689	1,451,794,475	2,076

\*—Automobile Manufacturers Association.

## BUS DELIVERIES\*

*By Type (From U. S. Plants)*

Year	City Coaches		
	Domestic	Foreign	Total
1946	6,842	699	7,541
1947	11,799	1,821	13,620
1948	6,971	1,267	8,238
1949	3,402	398	3,800
Year	Intercity Coaches		
	Domestic	Foreign	Total
1946	2,276	107	2,383
1947	3,451	500	3,951
1948	2,558	468	3,026
1949	690	165	855
Year	Special Coaches†		
	Domestic	Foreign	Total
1946	159	7	166
1947	1,400	139	1,539
1948	997	38	1,035
1949	802	54	856
Total All Coaches			
1946	9,277	813	10,090
1947	16,650	2,460	19,110
1948	10,526	1,773	12,299
1949	4,894	617	5,511

†—Includes Integral School Buses.

\*—Automobile Manufacturers Association.  
Does not include Non-Integral School Buses.

## TRUCK PRODUCTION

By Makes, 1947-1949

	1949	1948	1947
Autocar	1,458	2,823	5,098
Brockway	1,622	2,919	4,742
Chevrolet	383,542	389,690	335,343
Federal	1,649	3,888	10,058
Ford	218,719	298,626	241,047
F.W.D.	505	1,077	2,103
G.M.C.	83,840	92,677	61,918
International	110,558	166,784	153,009
Oshkosh	204	231	328
Reo	3,300	10,894	20,349
Studebaker	63,473	67,982	67,811
White	9,791	13,799	20,513
Willys	49,973	104,631	86,706
Total	928,634	1,156,031	1,009,025

## U. S. TRUCK PRODUCTION\*

By Months, by Years

	1949	1948	1947
January	104,589	100,582	101,091
February	101,700	108,155	106,345
March	115,171	142,036	119,655
April	106,212	130,019	108,634
May	86,200	113,077	98,283
June	99,126	118,640	93,248
July	95,348	117,792	99,561
August	99,850	112,531	88,251
September	91,389	112,367	112,327
October	84,704	108,048	120,032
November	72,749	104,382	89,027
December	66,744	108,526	103,168
Total	1,123,792	1,376,155	1,239,642

	1946	1945	1944
January	45,500	67,394	58,827
February	35,258	64,510	55,916
March	38,193	75,057	56,695
April	81,719	67,579	56,071
May	78,162	71,267	57,287
June	60,812	66,456	61,479
July	88,453	54,563	61,921
August	98,948	44,779	69,015
September	96,515	31,572	65,605
October	108,141	42,225	64,723
November	102,075	53,634	69,497
December	109,054	29,542	72,165
Total	940,830	668,578	749,201

	1943	1942	1941
January	49,612	93,181	86,436
February	47,546	77,269	87,824
March	55,979	89,537	94,106
April	56,173	64,157	85,395
May	55,190	61,064	97,115
June	56,516	73,732	97,884
July	60,285	63,885	97,877
August	61,321	59,526	65,383
September	57,582	59,857	68,460
October	60,160	56,743	81,478
November	57,168	31,628	93,128
December	59,583	54,685	105,734
Total	677,115	805,264	1,080,820

\*—W.P.B. records for 1942 through 1945. Automobile Manufacturers Association 1946 through 1949.

## Revenue Bus Factory Sales From U. S. Plants\*

	1949	1948	1947
January	658	1,382	1,273
February	418	1,101	1,303
March	545	1,430	1,421
April	514	1,056	1,650
May	564	1,288	1,853
June	632	1,068	1,628
July	439	1,012	1,806
August	444	771	1,765
September	298	1,143	1,607
October	322	679	1,667
November	308	545	1,416
December	369	824	1,721
Total	5,511	12,299	19,110

	1946	1944	1941
January	447	231	430
February	265	245	456
March	527	336	662
April	948	352	603
May	789	367	701
June	774	293	609
July	862	381	650
August	1,067	470	627
September	833	563	748
October	975	594	615
November	1,146	484	573
December	1,438	1,483	952
Total	10,091	5,799	7,626

\*—Automobile Manufacturers Association.

## INDUSTRY STATISTICS

### NEW TRUCK REGISTRATIONS\*

by MAKES, by G.V.W.—1947-1949

	5,000 lb. and less	5,001- 10,000	10,001- 14,000	14,001- 16,000	16,001- 19,500	19,501- 26,000	26,001 and over	Total
<b>AUTOCAR</b>	{ 1949	.....	.....	.....	.....	.....	1,655	1,655
	1948	.....	.....	.....	.....	.....	2,770	2,770
	1947	.....	.....	.....	.....	.....	4,334	4,334
<b>BROCKWAY</b>	{ 1949	.....	.....	166	128	631	701	1,626
	1948	.....	.....	370	239	1,606	743	2,958
	1947	.....	.....	574	120	2,437	1,124	4,255
<b>CHEVROLET</b>	{ 1949	179,489	88,622	26,890	49,518	.....	.....	345,519
	1948	124,869	72,143	32,651	72,756	.....	.....	302,219
	1947	87,648	40,252	25,888	82,015	.....	.....	235,803
<b>CROSLEY</b>	{ 1949	871	.....	.....	.....	.....	.....	871
	1948	2,411	.....	.....	.....	.....	.....	2,411
	1947	.....	.....	.....	.....	.....	.....	.....
<b>DIAMOND T</b>	{ 1949	.....	1,025	1,507	1,217	521	553	349
	1948	.....	1,115	3,779	3,530	1,128	704	403
	1947	.....	945	2,643	4,704	1,271	390	522
<b>DIVCO</b>	{ 1949	.....	3,168	409	.....	.....	.....	3,577
	1948	.....	4,678	940	.....	.....	.....	5,618
	1947	.....	3,636	1,257	.....	.....	.....	4,893
<b>DODGE</b>	{ 1949	52,866	32,398	50	20,945	9,482	1,212	3
	1948	42,097	28,710	978	29,777	11,377	1,492	.....
	1947	36,719	32,138	35,407	17,772	3,014	1,886	116,956
<b>FEDERAL</b>	{ 1949	.....	.....	60	467	266	357	75
	1948	.....	.....	625	1,981	396	821	203
	1947	.....	.....	1,068	3,143	213	997	599
<b>FORD</b>	{ 1949	99,044	35,909	30,387	25,901	8,795	4,143	202,178
	1948	79,616	50,287	51,140	31,047	10,717	2,922	225,729
	1947	48,365	33,533	85,057	21,459	.....	.....	188,414
<b>F. W. D.</b>	{ 1949	.....	.....	.....	27	227	83	337
	1948	.....	.....	.....	64	609	138	811
	1947	.....	.....	.....	140	699	356	1,195
<b>G. M. C.</b>	{ 1949	34,431	18,616	8,966	8,375	5,245	2,048	2,726
	1948	20,962	14,316	15,338	9,522	8,507	3,175	3,036
	1947	13,511	8,016	16,893	3,883	3,577	1,743	1,764
<b>INTERNATIONAL</b>	{ 1949	20,603	25,647	575	26,100	9,540	7,079	1,620
	1948	25,000	29,306	30,749	13,078	13,474	10,207	3,389
	1947	20,925	27,044	32,301	12,484	11,005	5,918	113,151
<b>KENWORTH</b>	{ 1949	.....	.....	.....	.....	.....	392	392
	1948	.....	.....	.....	.....	.....	478	478
	1947	.....	.....	.....	.....	.....	487	487
<b>MACK</b>	{ 1949	.....	.....	.....	654	741	1,826	3,645
	1948	.....	.....	.....	960	1,274	4,202	3,359
	1947	.....	1	1,373	1,671	5,215	2,657	10,917
<b>OSHKOSH</b>	{ 1949	.....	.....	.....	.....	.....	173	173
	1948	.....	.....	.....	.....	.....	228	245
	1947	.....	.....	.....	17	228	.....	.....
<b>REO</b>	{ 1949	.....	.....	2,281	1,304	327	91	4,003
	1948	.....	.....	3,953	4,684	246	486	10,773
	1947	.....	7,017	1,777	2,280	1,065	772	12,911
<b>STERLING</b>	{ 1949	.....	.....	.....	.....	16	213	226
	1948	.....	.....	.....	.....	14	387	411
	1947	.....	.....	.....	46	530	576	576
<b>STUDEBAKER</b>	{ 1949	25,159	14,788	9,279	5,873	.....	.....	55,099
	1948	18,651	10,979	16,638	4,389	.....	.....	50,657
	1947	20,271	6,271	12,366	2,953	.....	.....	41,861
<b>WARD LA FRANCE</b>	{ 1949	.....	.....	.....	.....	22	249	271
	1948	.....	.....	.....	.....	56	453	509
	1947	.....	.....	.....	.....	.....	.....	.....
<b>WHITE</b>	{ 1949	.....	.....	543	1,305	5,173	1,297	8,318
	1948	.....	.....	1,005	423	8,701	1,474	11,603
	1947	.....	899	399	1,828	8,534	1,426	13,086
<b>WILLYS-JEEP</b>	{ 1949	14,472	.....	.....	.....	.....	.....	14,472
	1948	48,644	.....	.....	.....	.....	.....	48,644
	1947	47,612	.....	.....	.....	.....	.....	47,612
<b>WILLYS-TRUCK</b>	{ 1949	9,284	9,009	.....	.....	.....	.....	18,293
	1948	16,768	11,074	.....	.....	.....	.....	

## 1949 NEW TRUCK REGISTRATIONS by Makes by States\*

STATE	Auto-car	Brock-way	Chevrolet	Diamond T	Diveo	Dodge	Federal	Ford	FWD	GMC	International	Ken-worth	Mack	Pontiac	Reo	Sterling	Stude-baker	White	Willys	All Others	Total
Alabama	1	8874	21	17	2571	11	4409	2	2092	1513	9	109	9	38	1202	113	657	37	21,674		
Arizona	1	1902	14	19	666	4	1483	2	484	312	6	9	1	28	2	526	17	225	43	5,744	
Arkansas	2	9002	47		2130	4	5226	1	1894	1376	22	2	90		1304	34	805	30	21,969		
California	96	19	20333	254	421	6777	35	11140	48	5322	3809	126	204	24	203	69	3931	423	1428	374	55,036
Colorado	1	4923	89	13	1471	16	226	2	1233	1086	2	8	1	31	857	50	610	14	12,569		
Connecticut	57	31	2197	73	71	926	35	1420	5	514	860	161	7	35	2	407	46	341	24	7,212	
Delaware	9	9	961	16	5	308	1	821		199	300	9	14	7		126	17	55	10	2,867	
District of Columbia	28	6	974	32	59	460	22	600		217	285	42	12	23	5	89	37	71	12	2,954	
Florida	4	7128	132	60	2580	15	4236	2	1393	1441	258	9	88		1208	136	1029	55	19,769		
Georgia	3	6	10252	103	18	3045	19	6750	2	2004	2206	161	39	121		1573	172	843	22	27,354	
Idaho	1	2423	91	2	884	7	1398	10	970	821	46	18	39		728	20	606	27	8,091		
Illinois	73	11	19537	515	257	6301	45	9626	18	3264	6180	227	36	271	3	2817	587	1184	178	51,130	
Indiana	12	13	8423	112	133	3144	25	5454	4	2097	3309	1	117	18	131		2013	324	660	72	26,082
Iowa	9	9699	166	44	3022	13	5367	13	1608	3245	1	84	9	83	1577	95	699	69	25,823		
Kansas	1	8886	94	24	2294	25	4386	1	1820	2458	1	10	23	69	1348	78	582	54	22,234		
Kentucky	5	1	7685	88	40	2159	17	4497	1	1923	1907	50	10	53	972	111	1351	41	21,116		
Louisiana	3	6798	106	16	1914	6	4766	2	1680	1417	59	9	29		1187	84	574	54	18,684		
Maine	9	15	2114	9	8	639	6	1144		724	646	75	13	49	1	311	46	209	14	6,032	
Maryland	39	65	3445	43	54	1488	37	2083		710	1023	127	7	68	1	381	108	238	37	9,954	
Massachusetts	127	106	3901	85	142	1890	14	2637	7	803	1333	239	9	115	40	697	239	286	28	12,698	
Michigan	25	4	13790	102	273	3965	60	9398	2	2712	2275	174	10	112		1422	234	586	113	35,257	
Minnesota	48	8475	86	55	2373	23	4631	6	1469	2768	6	136	9	51	1901	78	379	60	22,555		
Mississippi	1	7515	44		2018	4	3971		2025	1304	36	7	30		1061	32	569	34	18,683		
Missouri	8	1	13381	71	111	3826	1	6088	1	2827	2636	1	54	6	111		1663	211	877	47	31,915
Montana	5	3013	79	12	923	18	1901	8	987	1077	18	6	1	63		717	23	844	19	9,714	
Nebraska	2	6088	247	3	1486	13	3267	9	1332	2182	9	20	9	30		1200	72	1012	49	17,030	
Nevada	1	530	2	1	206	2	411		202	134	3	1	5	1	179		104	5	1,788		
New Hampshire	9	7	989	15	18	413	2	753	1	256	309	63	4	17	1	127	13	145	5	3,147	
New Jersey	123	219	7007	180	28	2937	88	5117	15	2149	2209	1	460	131	103	7	865	401	828	106	23,158
New Mexico	2	3197	33	3	892	2	1140	1	835	471	22	15	577	38	187	31	7,446				
New York	401	665	13125	607	396	7586	164	8699	53	4024	5212	1346	56	456	32	2037	1030	1542	353	47,784	
North Carolina	23	1	10850	48	43	3178	43	6541	3	1751	1876	377	17	111	5	1500	223	802	159	27,551	
North Dakota	6	3512	69	4	763	24	2109		654	1542	3	10	651	9	324	10	9,690				
Ohio	73	12	13964	220	344	5377	137	8391	9	2602	4112	285	103	195		2067	746	1131	118	39,886	
Oklahoma	7	8930	30	41	2924	3	5073	6	1873	2281	1	28	19	75	1354	132	865	35	23,677		
Oregon	16	4318	45	32	1667	18	2553	6	1297	1120	60	114	4	34	8	679	99	665	130	12,885	
Pennsylvania	218	363	14246	333	74	7009	93	9627	8	3775	4706	820	31	308	25	2384	825	1241	222	46,306	
Rhode Island	62	6	984	32	84	464	1	756		191	415	82	15	175	45	117	18	3,479			
South Carolina	13	1	4723	30	15	1542	1	2837	3	1055	771	116	5	20	589	73	334	20	12,148		
South Dakota	2777	94	4	799	7	1425	9	494	1367	9	7	2	17	531	6	493	31	8,074			
Tennessee	7	4	10606	88	29	2982	43	5016	1	2690	2271	155	11	134	1	1376	253	947	68	26,662	
Texas	70	2	24510	179	142	9180	18	15625	7	7488	6295	182	11	129	1	422	457	2646	467	71,650	
Utah			1898	53	8	650	14	1047	4	624	638	25	8	32	1	396	36	270	37	5,756	
Vermont	1	12	957	14	7	407	10	631	1	333	485	12	4	26		292	10	241	15	3,458	
Virginia	32	38	8419	70	47	2610	23	4886		1648	1706	147	10	70		1031	165	682	64	21,648	
Washington	10		4489	72	54	1814	11	3029	1304	1492	60	57	14	55	13	812	102	581	79	14,048	
West Virginia	2	6	3528	40	20	1398	20	2196	16	942	773	34	7	35		402	68	921	43	10,451	
Wisconsin	13		8445	142	142	2432	24	4471	57	1540	2772	105	28	146	3	1361	189	581	145	22,596	
Wyoming	1		1595	57		466	2	891	4	392	437	3	8	18		297	9	378	9	4,567	
Total—1949	1655	1626	345519	5172	3577	116956	1225	202179	337	80407	91164	392	6886	775	4003	229	55099	8318	32765	3697	981,981
Total—1948	2770	2958	302219	10657	5618	114431	4026	225729	811	74857	125203	478	9795		10773	411	50657	11603	76484	5694	1,035,174

\* Data from R. L. Polk & Co.

## NEW TRUCK REGISTRATIONS

by Makes, by Years\*

	1949	1948	1947	1946	1941	1940	Year	Wholesale Value	Year	Wholesale Value
Autocar	1,655	2,770	4,334	4,755	2,510	1,955	1934	\$304,642,000	1942	\$471,957,000
Brockway	1,626	2,958	4,255	3,683	2,294	1,672	1935	378,323,000	1943	527,710,000
Chevrolet	345,519	302,219	235,803	171,618	212,797	194,038	1936	448,527,000	1944	816,724,000
Crosley	871	2,411					1937	464,619,000	1945	1,284,926,000
Diamond T	5,172	10,657	10,475	5,093	6,077	6,358	1938	348,068,000	1946	1,752,918,000
Diveo	3,577	5,618	4,893	3,734	2,306	1,662	1939	454,673,000	1947	2,353,523,000
Dodge	116,956	114,431	126,736	96,490	62,925	54,615	1940	553,004,000	1948	2,552,872,000
Federal	1,225	4,026	6,020	4,557	1,611	1,817	1941	1,941	1949	1,912,000,000
Ford	202,179	225,729	186,414	131,469	174,024	162,333	1942	1,927	1949	327,965
F. W. D.	337	811	1,195	585	280	252	1943	341,123		
G. M. C.	80,407	74,857	49,187	25,645	11,703	42,436	1944	357,692		
Hudson		117	2,634	2,543	736	761	1945	361,057		
International	91,164	125,203	113,151	78,392	92,482	77,891	1946	377,442		
Kenworth	392	478	487				1947	381,800		
Mack	6,866	9,795	10,917	4,687	9,468	7,754	1948	386,1		

**NEW TRUCK REGISTRATIONS by Makes by States\***  
**For January, 1950**

STATE	Auto-car	Brock-way	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Ken-worth	Mack	Pontiac	Reo	Sterling	Stude-baker	White	Willys	All Others	Total
Alabama.....		591	109	1	3	184	1	449	106	104	5	3	1	2	10	200	86	12	45	1	1,594
Arizona.....		109	2	50			126	37	12	5						25	2	16	2	387	
Arkansas.....																					
California.....	8	1412	18	23	379	1	935	297	229	11	14	4	2	10	200	9	47	26	3,625		
Colorado.....		471	5	2	108	2	244	70	74	5	1	1				70	3	42	2	1,099	
Connecticut.....	5	4	169	4	8	64	5	105	39	44	18	2	1			16	8	10	2	504	
Delaware.....	1	2	78		3	22		84	14	24	1	2	1			13	2	3	2	252	
District of Columbia.....	7	48	1	10	24		30		9	15			3			5	3	1		156	
Florida.....	301	10	4	142		321		61	72	31		2	7		90	13	39	4	1,091		
Georgia.....	827	3	1	306	1	719		198	163	23	2	7			159	23	61	4	2,497		
Idaho.....	86				22	63	1	16	30	2	1				21	2	16	11	272		
Illinois.....	5	952	30	15	329	2	692	146	310	28	5	12			124	47	13	8	2,718		
Indiana.....	2	445	3	7	176		440	93	169	6	5	1			82	15	26	5	1,475		
Iowa.....		624	9	3	212		452	103	213	11	1	5			87	9	6	2	1,737		
Kansas.....	281	1	4	86		276		61	101	1					24	2	11		856		
Kentucky.....	556	2	2	127	3	401		98	106			4			50	1	49		1,399		
Louisiana.....	477	3		138		460		122	69	2		2			99	2	30	3	1,407		
Maine.....	3	4	198	2	1	74	143	67	72	11	5	1			31	2	27	3	644		
Maryland.....	1	5	259	4	5	100	6	199	45	50	12	3	4			26	3	15	2	739	
Massachusetts.....	11	9	288	17	9	259	3	259	100	87	26	6	12	2	45	10	22	2	1,167		
Michigan.....	1	922	5	15	294	7	722	1	137	147	10	1	8		93	9	16	2	2,390		
Minnesota.....	468	10	4	173	5	389	8	76	172	1	6	2			80	1	18		1,471		
Mississippi.....	553	3		167	2	286		138	76	5					86	26	19	10	1,344		
Missouri.....	576	7	11	173	1	417		130	135	1	9	6			105	14	15	22	1,607		
Montana.....	164	4		44	2	99	1	28	58	1	1	1			24	2	43		474		
Nebraska.....	387	15	1	112		305	6	63	136	1	2				62	3	40		1,133		
Nevada.....	29			12		22		18	6		1				8		8		104		
New Hampshire.....	37			20		24		13	13	2					3	3	2		117		
New Jersey.....	2	12	377	18	15	204	3	336	3	137	114	50	19	3	1	41	25	25	5	1,390	
New Mexico.....		253			67		112	67	37	2	4	1			58	2	18	4	625		
New York.....	40	79	1536	159	56	814	32	968	9	493	792	283	23	64	5	260	138	152	40	6,043	
North Carolina.....	3	572		2	210	1	632	105	80	26	2	3	2	108	13	16	6	1,781			
North Dakota.....	93	1		29	1	68		19	64						19		23	2	319		
Ohio.....	9	958	14	18	390	9	864	212	357	49	20	16			112	76	33	2	3,139		
Oklahoma.....	457	2	2	132		342	1	91	85						61	10	30	1	1,228		
Oregon.....	142	2	4	58		140		44	46	1					25	1	26	3	494		
Pennsylvania.....	8	36	796	14	12	446	5	773	172	275	82	12	30	2	102	47	41	6	2,859		
Rhode Island.....	4	66	1	2	38	1	58	16	31	6	3	1			11	5	6		252		
South Carolina.....	1	324	1		93		261		68	63	8				59	7	8		893		
South Dakota.....	140	13		49	1	95	3	24	75	2					27		18	1	448		
Tennessee.....	1	695	2	1	260		456	158	87	6	4	4	11		119	4	28	3	1,624		
Texas.....	2	2346	11	9	834	2	1973	604	480	4	15	4	11		348	31	171	10	6,855		
Utah.....	111	5	3	25		63	1	27	28	1	4	1			7		14	5	295		
Vermont.....	45			23		22		20	28						10	1	6	2	157		
Virginia.....	2	514	3	139		372		114	88	16	3	2			75	24	39	3	1,384		
Washington.....	192	1	7	75		151		44	70	1	12	2	1		23	6	18		603		
West Virginia.....	251		1	80	3	240		61	54	8	1	2			22	7	49		779		
Wisconsin.....	335	5	1	134	1	258	6	65	130	19	4	2			63	10	13	10	1,058		
Wyoming.....		69	2		12		24		32	22					14		14		189		
Total—January, 1950.....	113	154	21580	408	269	8009	100	16880	40	4858	5693	32	815	142	251	23	3278	633	1378	216	64,782
Total—January, 1949.....	226	164	21066	517	290	8402	119	11585	33	4681	7468	34	508	3	347	23	4272	708	3456	438	64,308

\* Data from R. L. Polk & Co.

**CENSUS OF TRUCKS, TRACTORS AND TRAILERS**

**Owned by Manufacturing Industries**

(Based on Reports from 1947 Census of Manufacturers.)

INDUSTRY GROUPS	Total Vehicles †	MANUFACTURERS RATED CAPACITY							
		Under 1½	1½	Over 1½-Less Than 3½	3½ and Less Than 5	5 and Over	Truck Tractors	Total-Trucks and Truck Tractors	Trailers and Semi-trailers
Food and kindred products.....	234,675	91,762	87,424	27,802	3,572	3,942	9,026	223,528	11,147
Tobacco manufacturers.....	745	140	256	141	19	30	77	663	82
Textile mill products and other fiber manufacturers.....	5,855	1,412	2,159	1,073	176	299	309	5,428	427
Apparel and other finished fabric products.....	2,896	1,487	818	288	57	46	94	2,790	106
Lumber and timber basic products.....	45,181	6,749	13,226	6,624	941	1,232	7,871	36,643	8,538
Furniture and finished lumber products.....	5,810	1,598	2,008	808	122	90	565	5,191	619
Paper and allied products.....	6,869	646	2,184	1,380	325	365	754	5,854	1,015
Printing, publishing and allied industries.....	7,232	4,408	1,547	680	205	305	52	7,177	55
Chemicals and allied products.....	18,580	3,556	6,224	2,748	674	1,095	1,587	15,865	2,715
Petroleum and coal products.....	6,862	1,593	1,691	1,035	258	559	754	5,890	972
Rubber products.....	1,375	317	384	166	32	47	106	1,052	323
Leather and leather products.....	1,149	425	401	141	37	41	42	1,087	62
Stone, clay and glass products.....	18,843	3,165	7,120	3,497	709	1,245	1,429	17,165	1,678
Primary metal products.....	6,846	1,537	1,982	1,232	351	666	475	6,243	603
Fabricated metal products (exc. ordnance machinery, transp. equip.).....	13,778	4,382	4,201	1,602	346	544	1,116	12,191	1,587
Machinery (except electrical).....	12,368	5,127	3,433	1,588	363	466	620	11,597	769
Electrical machinery, appliances, equipment.....	3,339	1,285	906	422	102	179	181	3,075	264
Transportation equipment.....	8,543	2,167	1,854	1,194	185	291	1,116	6,807	1,736
Instruments and related products.....	849	371	221	107	20	67	11	797	52
Miscellaneous manufacturing industries.....	5,230	2,710	1,584	511	84	89	113	5,091	139
Motion picture production.....	705	216	170	74	60	89	10	619	86
Total—Manufacturing Industries.....	407,728	135,253	139,793	53,094	8,638	11,687	26,288	374,753	32,975
Per Cent of Total by Tonnage Classifications.....		36.09%	37.30%	14.17%	2.30%	3.12%	7.02%	100.00%	.....

†—Includes trucks, truck-tractors, trailers and semi-trailers.

## TOTAL TRUCK REGISTRATIONS by States

	1949	1948	1947	1946	1945	1944	
Alabama	137,405	127,065	108,251	98,441	72,141	67,723	
Arizona	52,919	48,647	42,295	35,044	29,462	27,211	
Arkansas	121,413	125,161	112,157	94,450	78,902	74,459	
California	559,369	529,492	487,929†	406,729†	355,282†	327,735†	
Colorado	124,709	115,006	101,953	90,543	76,837	70,524	
Connecticut	77,716	75,691	76,432	75,266	58,861	60,896	
Delaware	17,682	17,557	15,913	14,296	13,162	14,371*	
District of Columbia	18,389	18,389	15,588	14,495	13,879	13,563	
Florida	165,307	156,639	138,373	120,525	96,384	88,053	
Georgia	178,479	167,525	150,108	128,403	104,650	97,553	
Idaho	64,137	59,644	50,877	40,000	38,352	35,533	
Illinois	336,174	315,988	282,125	253,385	224,929	216,930	
Indiana	206,154	227,480	197,416	163,859	137,809	137,252	
Iowa	168,303	150,973	133,868	115,984	102,176	98,373	
Kansas	195,449	183,733	167,366	147,296	129,353	121,819	
Kentucky	154,941	137,711	118,461	101,541	82,017	76,603	
Louisiana	140,001	122,935	105,958	98,117	78,256	72,015	
Maine	59,594	62,210	61,001	56,769	49,891	44,527	
Maryland	92,200	90,935	82,611	81,649	65,090	53,319	
Massachusetts	153,208	151,609	144,113	131,071	111,417	103,606	
Michigan	270,309	258,689	222,560	194,548	167,677	156,174	
Minnesota	182,532	183,756	148,644	130,946	115,906	113,866	
Mississippi	123,954	117,537	99,390	95,536	68,988	65,780	
Missouri	245,000	227,205	209,997	188,394	157,084	143,867	
Montana	76,476	70,391	63,871	54,947	48,280	46,730	
Nebraska	122,100	105,750	98,296	87,121	75,554	72,544	
Nevada	14,551	13,417	12,595	10,778	9,193	9,520	
New Hampshire	36,214	31,623	35,663	28,872	23,483	27,240	
New Jersey	207,326	199,260	186,794	167,506	149,000	138,937	
New Mexico	52,564	45,698	41,062	35,179	29,640	27,826	
New York	493,868	498,125	425,323	370,709	354,052	282,091	
North Carolina	177,742	167,824	147,703	123,748	97,500	93,063	
North Dakota	77,347	68,919	60,777	53,968	49,262	46,946	
Ohio	304,801	296,296	270,284	242,603	196,810	144,484	
Oklahoma	183,435	162,941	143,078	128,124	109,896	102,383	
Oregon	123,897	115,848	115,845*	99,025	82,408	77,773	
Pennsylvania	428,853	416,551	407,591	342,172	304,972	276,072	
Rhode Island	30,181	29,662	28,413	26,959	22,607	20,985	
South Carolina	100,633	91,649	85,376	64,158	46,047	45,701	
South Dakota	66,856	60,163	50,545	42,163	37,149	35,590	
Tennessee	144,000	139,020	124,826	99,517	77,134	73,680	
Texas	531,000	526,000	437,705	379,158	307,655	286,669	
Utah	42,308	39,637	37,148	31,267	28,748	25,836	
Vermont	15,023	15,355	14,818	13,570	11,667	10,806	
Virginia	152,592	150,633	132,996	116,084	94,286	82,912	
Washington	152,980	145,787	133,102	117,173	103,762	96,168	
West Virginia	89,546	86,217	76,940	66,612	55,512	51,381	
Wisconsin	210,736	196,503	181,443	160,940	142,240	139,186	
Wyoming	35,358	31,709	27,341	24,105	21,436	20,472	
Total	7,715,831	7,356,553	6,612,922	5,749,643	4,906,778	4,516,157	

†—Includes light commercial vehicles registered as passenger cars.

\*—Includes trailers for 1947 and all previous years.

‡—Large increase due to change in classification of trucks previously registered as passenger cars.

## TOTAL U. S. TRUCK REGISTRATIONS

Year	Units	% Gain
1910	10,000	65
1911	20,000	100
1912	41,400	107
1913	63,800	54
1914	85,600	34
1915	136,000	59
1916	215,000	58
1917	326,000	52
1918	525,000	61
1919	794,372	51
1920	1,006,082	27
1921	1,117,100	11
1922	1,375,725	23
1923	1,612,569	17
1924	2,134,724	32
1925	2,440,854	14
1926	2,764,222	13
1927	2,914,019	5
1928	3,113,999	7
1929	3,379,854	8
1930	3,486,019	3
1931	3,486,571	0.6
1932	3,229,315	-0.7
1933	3,227,357	-0.6
1934	3,409,335	5.5
1935	3,655,705	7.1
1936	3,981,755	9.1
1937	4,107,244	3.1
1938	4,210,022	2.5
1939	4,419,893	5.0
1940	4,604,722	4.2
1941	4,859,682	5.5
1942	4,644,209	-4.4
1943	4,549,882	-2.0
1944	4,516,157	-0.7
1945	4,908,778	8.8
1946	5,749,643	17.1
1947	6,612,922	15.0
1948	7,356,553	.....
1949	7,715,831	.....

## Truck Dealers, Wholesalers, Independent Repair Shops \*

(As of January of Each Year.)

Whole-Salers	Total Truck Dealers	Independent Repair Shops
1936	5,905	23,045
1937	5,874	24,853
1938	5,934	27,248
1939	6,019	26,909
1940	6,176	24,575
1941	6,575	24,992
1942	6,631	32,291
1943	6,130	27,820
1944	6,101	42,166
1945	6,217	41,193
1946	6,612	42,702
1947	7,328	49,485
1948	7,982	55,998†
1949	8,338	59,908
1950	8,567	63,714

†—Reduction in truck dealers due to discontinuance of Plymouth truck production.

\*—Trade List Department, Chilton Company.

## 1950 Domestic Truck Factory Sales by Gross Vehicle Weights\*

5,000 lb. and less	5,001- 10,000	10,001- 16,000	16,001- 26,000	19,501- and Over	26,000 Total
December, 1949	30,427	12,782	4,512	7,217	2,709
January, 1950	39,252	19,251	6,804	13,093	2,774

\*—Automobile Manufacturers Association.

## TRUCKS IN USE by Makes and by Year of Manufacture

Year of Manu-facture	Auto-car	Brock-way	Chev-rolet	Cross-ley	Diamond T	Divco	Dodge	Fed-eral	Ford	FWD	GMC	Hudson	Inter-na-tional	Ken-worth	Mack	Reo	Ster-ling	Stude-baker	White	Willys	All Others	Total July 1, 1949
1949	691	614	161,421	413	2,485	1,798	53,203	528	84,920	313	39,132	.....	42,621	129	2,596	88	49,508	3,851	16,554	5,962	468,471	
1948	2,459	2,647	290,548	3,344	10,065	5,622	113,032	3,417	226,651	457	74,824	.....	119,038	393	8,963	349	28,524	10,855	55,525	15,570	983,653	
1947	4,072	3,939	208,193	2,002	10,447	5,536	121,034	5,518	174,674	928	48,660	.....	115,416	471	12,233	10,462	513	40,109	31,588	14,856	82,162	
1946	4,562	3,704	252,474	46	5,237	4,278	114,234	4,153	186,458	712	26,036	.....	85,944	431	4,287	9,651	555	26,585	9,968	26,412	11,364	757,071
1945	2,243	1,995	34,230	10	3,141	1,851	19,655	1,880	43,145	322	12,607	.....	26,304	373	4,692	2,667	410	3,152	6,521	3,714	173,416	
1944	1,115	1,026	16,339	1	1,568	239	7,308	751	17,512	131	6,374	.....	14,734	126	2,818	458	277	1,088	911	1,969	78,436	
1943	188	69	2,741	6	208	75	1,952	305	7,432	32	2,716	.....	3,576	29	376	136	32	661	1,238	1,784	1,097	24,653
1942	728	296	91,768	72	1,445	561	40,710	820	72,990	156	24,520	.....	27,139	76	2,639	1,143	199	2,301	3,649	4,006	4,652	279,870
1941	2,384	2,049	196,811	85	5,303	2,659	80,936	1,116	168,667	264	43,076	780	82,343	226	8,380	1,482	369	5,482	8,123	2,779	16,162	629,246
1940	1,331	1,210	154,853	25	4,516	1,613	49,611	1,001	122,357	188	30,565	538	63,024	195	5,888	342	268	1,326	4,073	2,461	14,139	459,529
1939	1,294	1,289	121,139	7	3,558	1,299	41,016	853	90,599	172	21,832	389	51,923	108	4,815	695	229	1,813	2,833	1,147	11,865	

# AASHO Standards

**Recommended uniform standards  
submitted by American Associa-  
tion of State Highway Officials  
for width, height, length, speed  
and permissible vehicle loads**

Uniform standards governing the maximum dimensions, weights and speeds of motor vehicles proposed by the Highway Transport Committee of the American Association of State Highway Officials, have been adopted by a letter ballot of the member State highway departments, with a recommendation that they be incorporated in the motor vehicle laws of all States.

The Association recommends that the standards be considered for adoption by all States in order to promote efficiency in the interstate operation of motor vehicles, increase the safety of highway transportation and establish a basis for regulation of the many relationships between the dimensions and weights of motor vehicles and the strengths and capacities of existing highways.

The standards, based upon years of research by State highway departments, and the Public Roads Administration, are advocated in lieu of recommendations previously made by the American Association of State Highway Officials on November 17, 1932, and of modified recommendations applicable during the war emergency period, which were adopted May 27, 1942.

The recommendations, as finally adopted, are as follows:

- 1. Width:** No vehicle unladen or with load, shall have a total outside width in excess of 96 in. (Note: It is recognized that certain conditions inherent in the design of vehicles suggest the desirability of 102 in. as a standard of maximum width, but the existence of numerous bridges and a large mileage of highway too narrow for the safe accommodation of vehicles of such width precludes the present adoption of the higher standard of width. The State highway departments and Public Roads Administration are urged to give serious consideration to the desirability of eventual provision for the accommodation of vehicles 102 in. in width in planning the reconstruction of Federal aid and State highways.)

**2. Height:** No vehicle, unladen or with load, shall exceed a height of 12 ft., 6 in.

3. Length: (a) No single truck, unladen or with load, shall have an overall length, inclusive of front and rear bumpers, in excess of 35 ft.

(b) No single bus, unladen or with load, shall have an overall length, inclusive of front and rear bumpers, in excess of 40 ft., provided that a bus in excess of 35 ft. in overall length shall have not less than 3 axles.

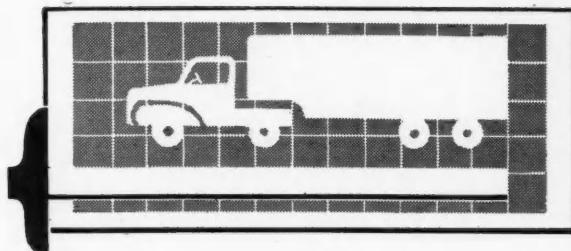
(c) No combination truck-tractor and semi-trailer, unladen or with load, shall have an overall length inclusive of front and rear bumpers, in excess of 50 ft.

(d) No other combination of vehicles shall consist of more than two units, and no such combination of vehicles, unladen or with load, shall have an overall length, inclusive of front and rear bumpers, in excess of 60 ft.

(TURN TO PAGE 220 PLEASE)

# SECTION 3

N I N E T E E N - F I F T Y  
F L E E T O P E R A T O R S  
R E F E R E N C E A N N U A L



# **SELECTION and OPERATION**

## SPECIFICATIONS

<b>Power Ratings—Current Engines.....</b>	<b>126</b>
<b>Transmission Ratios .....</b>	<b>128</b>
<b>Diesel Fuels .....</b>	<b>133</b>
<b>Third Axles .....</b>	<b>134</b>
<b>American Integral Buses .....</b>	<b>136</b>
<b>CCJ Truck Specifications Table.....</b>	<b>139</b>

## **SPECIAL CHARTS & DATA**

<b>AASHTO Standards .....</b>	<b>121</b>
<b>Truck Tire Data .....</b>	<b>122</b>
<b>Safety Equipment—State &amp; ICC.....</b>	<b>123</b>
<b>State Sizes &amp; Weights .....</b>	<b>130</b>
<b>Transportation Formulas .....</b>	<b>138</b>

# TRUCK TIRE DATA

**Showing ply ratings, dual spacing, max. pressures, max. load,  
rev. per mile, advanced and interim rim recommendations**

Tire Size	Ply Rating	Advanced Rim Recommended Permissible	Interim Rim Recommended Permissible	Maximum Pressure (lb)	Maximum Load (lb)	Minimum Dual Spacing		Tube Size	Flap	Approximate* Revolutions Per Mile
						With Chain	Without Chain			
6.50-17.....	6	5.0	.....	50	1500	9.0	8.4	6.50-17W	17-K	675
6.50-18.....	6	5.0	.....	50	1575	9.0	8.4	6.50-18W	18-K	.....
6.50-20.....	6	5.0	5.00R	50	1700	9.0	8.4	6.50-20W	20-K	610
7.00-17.....	8	5.5 5.0	5.50S 5.00R	55	1775	9.7 9.5	9.0 8.8	7.00-17W	17-M	651
7.00-18.....	8	5.5 5.0	5.50S 5.00R	55	1800	9.7 9.5	9.0 8.8	7.00-18W	18-M	630
7.00-20.....	8	5.5 5.0	5.50S 5.00R	55	2000	9.7 9.5	9.0 8.8	7.00-20W	20-M	596
7.50-17.....	8	6.0 5.5	6.00S 5.50S	60	2100	10.3 10.1	9.6 9.4	7.50-17W	17-M	637
7.50-18.....	8	6.0 5.5	6.00S 5.50S	60	2200	10.3 10.1	9.6 9.4	7.50-18W	19-M	617
7.50-20.....	8	6.0 5.5	6.00S 5.50S	60	2375	10.3 10.1	9.6 9.4	7.50-20W	20-M	580
8.25-17.....	10	6.5 6.0	6.50T 6.00S	65	2600	11.2 11.0	10.4 10.2	8.25-17W	17-M	.....
8.25-18.....	10	6.5 6.0	6.50T 6.00S	65	2675	11.2 11.0	10.4 10.2	8.25-18W	18-M	570
8.25-20.....	10	6.5 6.0	6.50T 6.00S	65	2900	11.2 11.0	10.4 10.2	8.25-20W	20-M	553
9.00-18.....	10	7.0 6.5	7.00T 6.50T	65	3225	12.2 12.0	11.4 11.2	9.00-18W	18-N	559
9.00-20.....	10	7.0 6.5	7.00T 6.50T	65	3450	12.2 12.0	11.4 11.2	9.00-20W	20-N	530
10.00-18.....	12	7.5 7.0	7.50V 7.00T	70	3775	13.1 12.9	12.2 12.0	10.00-18W	18-R	544
10.00-20.....	12	7.5 7.0	7.50V 7.00T	70	4000	13.1 12.9	12.2 12.0	10.00-20W	20-R	515
10.00-22.....	12	7.5 7.0	7.50V 7.00T	70	4275	13.1 12.9	12.2 12.0	10.00-22W	22-R	489
10.00-24.....	12	7.5 7.0	7.50V 7.00T	70	4550	13.1 12.9	12.2 12.0	10.00-24W	24-R	468
11.00-20.....	12	8.0 7.5	8.00V 7.50V	70	4500	13.8 13.6	12.8 12.6	11.00-20W	20-R	494
11.00-22.....	12	8.0 7.5	8.00V 7.50V	70	4750	13.8 13.6	12.8 12.6	11.00-22W	22-R	460
11.00-24.....	12	8.0 7.5	8.00V 7.50V	70	5000	13.8 13.6	12.8 12.6	11.00-24W	24-R	450
12.00-20.....	14	8.5 8.0	8.50V 8.00V	75	5275	14.6 14.4	13.6 13.4	12.00-20W	20-R	482
12.00-22.....	14	8.5 8.0	8.50V 8.00V	75	5600	14.6 14.4	13.6 13.4	12.00-22W	22-R	460
12.00-24.....	14	8.5 8.0	8.50V 8.00V	75	5925	14.6 14.4	13.6 13.4	12.00-24W	24-R	441
13.00-20.....	16	9.0 8.5	9.00V 8.50V	75	6275	15.9 15.6	14.9 14.6	13.00-20W	20-V	473
13.00-24.....	16	9.0 8.5	9.00V 8.50V	75	7025	15.9 15.6	14.9 14.6	13.00-24W	24-V	422
14.00-20.....	18	10.0 9.0	9.00V (a) .....	80	7650	17.3 16.9	16.2 15.8	14.00-20W	20-V	437
14.00-24.....	18	10.0 9.0	9.00V (a) .....	80	8525	17.3 16.9	16.2 15.8	14.00-24W	24-V	403

\*—For an accurate formula used in figuring revolutions per mile, see p. 135.

(a)—Dual spacing with chain—16.9; without chain—15.8. Disregard columns 7 and 8.

Data excerpted from Tire & Rim Association, Inc. 1949 Yearbook.

# Safety Equipment

**Required & Permitted on Trucks, Truck-Tractors, Trailers & Buses**

**As Specified in I.C.C. Safety Rules & Regulations, State Motor Vehicle Laws  
& Official Rulings . . . and Compiled by National Highway Users Conference**

**TABULATION OF SAFETY REQUIREMENTS ON PAGES 124 & 125**

**EXPLANATION OF I.C.C. REFERENCES**

†—The I.C.C. Motor Carrier Safety Regulations apply to "Automotive Safety Equipment" on vehicles operated by common and contract carriers ("for hire" carriers) of persons or property and by private carriers of property, when operated regularly in interstate or foreign commerce, except when operated wholly within a municipality, between contiguous municipalities, or within a zone adjacent to and commercially a part of any such municipality or municipalities. When vehicles of common, contract or private carriers are transporting explosives or other dangerous articles the last-mentioned except-

tion does not apply.

‡—Requires "a device or other means of preventing or removing ice or frost" from windshield.

\*—I.C.C. neither approves nor disapproves any individual required item. Its Motor Carrier Safety Regulations, however, set forth certain constructional details or performance standards to which certain items must conform. Reference should be made to the Motor Carrier Safety Rules for complete details.

**COLOR AND REQUIREMENT SYMBOLS**

A—Amber
G—Green
R—Red
N—No
NP—Not Permitted
NR—Not Required
NS—Not Specified

NSM—Not Specifically Mentioned
Y—Yes
Ye—Yellow
W—White
/—When used between two letters or numbers means "or."
Example—2/4 means "2 or 4."

**GENERAL FOOTNOTES**

- a—Prohibits red light visible from in front of vehicle.
- b—Prohibits red or green light visible from in front of vehicle.
- c—Tail lamp or separate lamp shall illuminate rear license plate with white light.
- d—Must be located and constructed so as to illuminate rear license plate with white light.
- e—May be incorporated in tail lamp.
- f—Semaphores required on school buses.
- g—One or both may be incorporated in tail lamp or lamps.
- h—Number plate must be illuminated with white light.
- i—Also two yellow reflectors on front of truck 70 in. or more in width and bus over 7 passengers.
- j—Also one amber reflector on front of vehicle.
- k—One may be part of tail lamp.
- m—Reflectors may be substituted.
- n—Reflectors may be used when vehicle has acetylene lamps.
- p—White, green or amber. Where green originally used, may be continued till replacements are necessary.
- r—Yellow or orange flags required.
- s—On vehicles over 45 feet long, rear clearance and marker lamps shall be in combination.
- t—One green marker lamp every 10 feet on combinations over 33 feet long.

- u—Vehicles manufactured after December 31, 1949, shall have double wipers.
- v—Rear clearance lamps may be red. May also be green on vehicles used prior to January 1, 1940.
- y—Trailer and semi-trailers shall have one lamp on front visible from both sides.
- z—Clearance and marker lamps may be in combination.
- aa—Every vehicle 72 in. or more wide must have 2 amber or clear front, and 2 amber, clear or red rear reflectors. Clearance lamps may be substituted. Reflectors must be approved. Clearance lamps need not be approved.
- cc—Vehicles manufactured after January 1, 1943, shall have double wipers.
- dd—On *interstate* buses—green lights adjacent to destination sign or near upper corners;  
On *intrastate* buses—purple lights in same locations.
- ee—Double wipers required on all school buses.
- ff—Two yellow stop lamps required on all buses.
- ii—Clearance and marker lamps may be in combination. When in combination there must be one such lamp on each side, midway of vehicle.
- kk—Permits tinted other than red.
- xx—Fog lamps are included within the term "Auxiliary Driving Lamps" and are treated accordingly.

Data Revised to March 10, 1950

# SAFETY EQUIPMENT REQUIREMENTS (Cont.)

REFERENCES AND SYMBOLS EXPLAINED ON PAGE 123

Jurisdictional Control Over Equipment	SAFETY EQUIPMENT																															
	TO BE MOUNTED ON VEHICLES																															
	HEAD LAMPS			TAIL LAMPS			STOP LAMPS			REAR REFLECTORS			CLEARANCE LAMPS			SIDEMARKER LAMPS			IDENTIFICATION LAMPS			DIRECTION SIGNALS										
	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved								
I.C.C.	2	NS	*	1	R	*	1e	R/ye	*	2g	R	*	2/4z	A	R	*	2/4z	A	NR	*	NR	2/4	A	*								
Ala.	2	W/A	Y	1d	R	Y	1	R	Y	2	R	N	2	W	R	N	NR	NR	NS	NS	R	Y	2	NS	R							
Ariz.	2	NSa	Y	1d	R	Y	1	R	Y	NR	.....	.....	2	W	R	Y	NR	NR	4	A	R	Y	NR	1	1							
Ark.	2	NSb	Y	1c	R	Y	1	R/ye	Y	1e	R	Y	2	G	R	Y	4m	G	R	Y	3	G	R	Y	4	Ye	Ye					
Calif.	2	W/A	Y	1c	R	Y	1e	A/R	Y	1/2k	R	Y	4	A	Av	Y	NR	NR	4	A/W	A/R	Y	NR	1	1							
Colo.	2	W/A	Y	1c	R	Y	1e	R	Y	2k	R	Y	4	A	R	Y	4	A	R	Y	NR	4	Ye/R	Ye/R	Y	4	A	R	Y			
Conn.	2	W/A	Y	1c	R	Y	1	Rff	Y	1/2k	A/RW	Y	4aa	A/W	A/RW	Y	NR	.....	2	dd	NR	N	4	Ye/A	Ye/A	Y	4	A/W	W/RAY			
Del.	2	W	Y	1d	R	Y	NR	.....	NR	.....	4	A	R	Y	1	t	Y	NR	4	A	A	Y	NR	1	1							
D. of C.	2	NSa	Y	1c	R	Y	1e	R/ye	Y	2	R	Y	4	A	R	Y	4	A	R	Y	NR	4	A	A	Y	4	A	R	Y			
Fla.	2	NSa	Y	1c	R	N	1e	R	N	2	R	N	2/4z	A	R	N	2/4z	A	R	N	NR	NS	4	A	R	N	1	1				
Ga.	2	NSa	N	1c	R	N	1	A/R	N	2e	R	Y	2/4z	A	R	N	2/4z	A	R	N	NR	4	A	R	N	1	1					
Idaho	2	W	Y	1d	R/ye	Y	1e	A/Rye	Y	2g	R	Y	2/4z	A	R	Y	2/4z	A	R	Y	NR	NS	Ye	Ye/R	Y	4	A	R	Y			
Ill.	2	Ye/AW	N	1	R	N	1	Ye/R	N	1j	R	Y	NS	NS	NS	NS	NS	NS	N	3	G	R	N	NS	A	Ye/R	Y	4	A	A	Y	
Ind.	2	W	N	1c	R	N	1fe	R	N	2i	R	N	2/4	A	R	Y	2/4	A	R	Y	NR	4f	Ye	Ye/R	Y	2/4	A	R	N			
Iowa	2	Wkk	Y	1c	R	Y	1	Ye/R	Y	2k	R	Y	2/4	Ye/WA	R	Y	2/4	Ye/AW	R	Y	3	Ye/AW	R	Y	NR	2/4	p	R	Y			
Kan.	2	W	Y	1c	R	Y	1	Ye/R	Y	1e	R	Y	2	A	R	Y	4m	A	R	Y	3	A	R	Y	NS	Ye	Ye/R	Y	4	A	R	N
Ky.	2	Wkk	N	1n	R	N	1	Ye/R	N	1e	.....	.....	2/4	G/W	R	N	NR	.....	NR	.....	.....	.....	NR	.....	.....	NR	.....	.....	NR	1		
La.	2	NSb	Y	1d	R	Y	1	R	Y	NR	.....	.....	2	A	R	Y	4	A	NS	Y	NR	4	A	R	Y	NR	1	1				
Me.	2	NS	Y	1c	R	Y	NR	.....	1e	R	N	2/3m	A/GW	R	N	NR	.....	NR	.....	.....	.....	NR	.....	.....	NR	.....	.....	NR	1			
Md.	2	Wkk	Y	1c	R	Y	1	A/R	Y	1e	R	Y	4m	A	R	Y	4mz	A	R	Y	NR	4	A	A/R	Y	NR	1	1				
Mass.	2	Ye/AW	Y	1	R	Y	NR	.....	1	R	Y	2	G	R	N	NR	.....	NR	.....	.....	.....	NR	.....	.....	NR	.....	.....	NR	1			
Mich.	2	W	N	1c	R	N	1	A/R	N	2	R	N	4z	A	R	N	4z	A	R	N	NR	NS	NS	NS	Y	2/4	A	R	N			
Minn.	2	W	Y	1c	R	Y	1	Ye/R	Y	1e	R	Y	4ii	A/W	R	Y	4ii	A/W	R	Y	NR	4	Ye	Ye/R	Y	NR	1	1				
Miss.	2	W	Y	1c	R	Y	1	A/R	Y	2	R	Y	4	A	R	N	4	A	R	Y	NR	4	A	A/R	Y	4	G	R	Y			
Mo.	2	W	Y	1c	R	Y	1	NS	Y	2/4	Ap	Y	2/4	A	R	N	2/4	A	R	N	NR	NS	NS	NS	Y	NR	1	1				
Mont.	2	W	N	1d	R	N	NR	.....	2	R	N	4m	Ye/WG	H	N	NR	.....	NR	.....	.....	.....	NR	.....	.....	NR	.....	.....	NR	1			
Nebr.	2	NSb	Y	1	R	Y	1	R	Y	1	R	N	2m	A/G	R	Y	NR	.....	NR	.....	.....	.....	NS	NS	R	Y	NR	1				
Nov.	2	Wkk	N	1	R	N	1e	Ye/RA	N	2	R	N	2/4	A	R	N	2/4	A	R	N	NR	.....	2	A	R	N	1	1				
N. H.	2	NS	Y	1d	R	Y	NR	.....	2	R	Y	4s	A	R	Y	2s	A	R	Y	NR	NR	.....	4	A	R	Y	1	1				
N. J.	2	Ye/AW	Y	1c	R	Y	1	R	Y	1/2k	R	Y	NR	.....	.....	NR	.....	NR	.....	.....	.....	4	Ye/A	Ye/A	Y	NR	1	1				
N. M.	2	NS	Y	1d	R	Y	1e	Ye/R	Y	1/2k	R	Y	2/4	A	R	Y	4	A	R	Y	NR	4	A	A	Y	4	A	R	Y			
N. Y.	2	Ye/W	Y	1h	R	Y	1	R	Y	1/2ik	R	Y	NR	.....	NR	.....	NR	.....	NR	.....	4	Ye/A	Ye/A	Y	NR	1	1					
N. C.	2	NSb	Y	1d	R	Y	1	A/R	Y	1	R	Y	4	A	R	Y	NR	.....	NR	.....	.....	NS	NS	.....	Y	NR	1					
N. D.	2	NSb	Y	1	R	Y	1	R	Y	NR	.....	2	A	R	Y	NR	.....	NR	.....	.....	NS	NS	R	Y	NR	1						
Ohio	2	W	N	1c	R	N	1	Ye/R	Y	2	R	N	4	A	R	N	4	A	R	N	NR	.....	4	A	R	N	1					
Oklahoma	2	W	Y	1c	R	Y	1e	R/AYe	Y	2e	R	Y	4	A	R	Y	4	A	R	Y	NR	NS	Ye/A	R	Y	4	A	R	Y			
Ore.	2	NSb	Y	1c	R	Y	1	Ye/R	Y	2k	R	Y	2/4	A	R	Y	2/4	A	R	Y	NR	2/4	A	R	Y	2/4	A	R	Y			
Penna.	2	NSa	Y	1c	R	Y	1	Ye/R	Y	1	R	Y	2m	A	R	N	4m	A	R	N	3	A	R	N	2/4	Ye/A	Ye/R	Y	4	A	R	Y
R. I.	2	A/W	Y	1d	R	Y	NR	.....	1	R	Y	NR	.....	NR	.....	NR	.....	NR	.....	4	Ye/A	Ye/A	Y	1	Ye/A	NR	Y	1				
S. C.	2	W	N	1c	R	N	1	Ye/R	Y	1e	R	N	2/4z	A	R	N	2/4z	A	R	N	NR	4	A	Ye/R	Y	2/4	A	R	Y			
S. D.	2	NSa	Y	1d	R	Y	1	Ye/R	Y	1e	R	Y	2	W	R	Y	NR	.....	3	G	R	Y	4	A	Ye/R	Y	NR	1				
Tenn.	2	NSa	Y	1	R	Y	1	A/R	Y	2	R	N	4	A	R	Y	4	A	R	Y	NR	NR	.....	4	A	R	Y	1				
Tex.	2	W	Y	1d	R	N	1	Ye/R	Y	2	R	Y	2/4z	A	R	Y	2/4z	A	R	Y	NR	4	A	A	Y	2/4	A	R	Y			
Utah	2	NSa	Y	1c	R	Y	1e	Ye/R	Y	2g	R	Y	4	A	R	N	4	A	R	N	NR	4	A	Ye/R	Y	4	A	R	Y			
Vt.	2	NS	Y	1d	R	Y	NR	.....	NR	.....	1	G	R	Y	NR	.....	NR	.....	NR	.....	NR	.....	NR	.....	NR	1						
Va.	2	W	Y	1c	R	Y	1	R	Y	NR	.....	4	A	R	Y	NR	.....	1y	W	NR	Y	4	A	A/R	Y	NR	1					
Wash.	2	NSa	Y	2c	R	Y	1e	R	Y	2e	R	Y	4	Ye	R	Y	2/4z	A	R	Y	NR	4	Ye	Ye	Y	4	Ye/A	R	Y			
W. Va.	2	NSa	N	1c	R	N	1e	A/R	N	2g	R	N	2/4z	A	R	N	2/4z	A	R	N	NR	4	A	R	N	1	1					
Wisc.	2	W	Y	1m	A/R	Y	1m	A/R	N	1	R	Y	2/4	A	R	Y	NR	.....	NR	.....	NR	.....	4	A	R	Y	1					
Wyo.	2	NSa	Y	1d	R	Y	1	R	Y	1	R	Y	2m	G	R	Y	2m	G	R	Y	NR	4	Ye	Ye	Y	4	A	R	Y			

# SELECTION & OPERATION

**REQUIRED**

**PERMITTED**

TO BE CARRIED IN VEHICLES												TO BE MOUNTED												Driving Lights Permitted Lit At One Time										
REAR-VIEW MIRROR	WIND-SHIELD WIPERS	DE-FROSTERS	FIRE EXTINGUISHERS	LIQUID BURNING FLARES	ELECTRIC FLARES	REFLECTOR FLARES	FUSES	RED CLOTH FLAGS	LIGHT OR FLAG ON PROJECTING LOAD	AUXILIARY DRIVING LAMPS						FOG LAMPS						SPOT LAMPS						Driving Lights Permitted Lit At One Time	Jurisdictional Control Over Equipment					
										Number	Must Be Approved	Number	Must Be Approved	Color	Number	Must Be Approved	Color	Number	Must Be Approved	Color	Number	Must Be Approved	Color	Number	Must Be Approved									
1	*	1	*	1	*	1	*	3	R	*	3	NS	15	2	12	1	12	NSM	NSM	NSM	NSM	NSM	NSM	NSM	NSM	4	I.C.C.							
1	N	1	N	NR	NR	3	Y	3	R	Y	3	R	Y	3	R	NS	2	12	1	12	2	NS	Y	2	NS	Y	1	NS	Y	NS	Ala.			
1	N	1	N	1	Y	3	N	3	R	N	NR	*	3	R	15	3	12	1	12	2	NSa	Y	XX	*	2	NSa	Y	NS	Ariz.					
1	N	1	N	NR	NR	3	Y	3	R	Y	3	R	Y	NR	*	NR	*	1	16	3	NSa	Y	XX	*	1	NSa	Y	4	Ark.					
1	N	1	N	NR	1	Y	2	N	2	R	N	2	R	Y	NR	*	NR	*	2	16	2	A/W	Y	2	A/W	Y	2	NS	Y	4	Calif.			
1	N	1	N	NR	NR	3	Y	3	R	Y	3	R	Y	3	R	20	3	NS	1	16	3	NS	Y	XX	*	1	NS	Y	4	Colo.				
1	N	1	N	1	N	1	N	3n	Y	3n	R	Y	3n	R	Y	3n	R	NS	NR	*	1	NS	2	A/W	N	XX	*	1	A/W	N	4	Conn.		
1	N	1	N	NR	NR	3	Y	3	R	Y	3	R	Y	NR	*	NR	*	1	12	2	W	Y	2	A/W	Y	1	A/W	N	2	D. of C.				
1	N	2	N	NR	1	N	N	NR	NR	*	NR	*	NR	*	NR	*	NR	*	1	12	2	A/W	Y	2	A/W	Y	1	NSa	N	NS	Fla.			
1	N	1	N	NR	NR	3	Y	3	R	Y	NR	*	3	R	15	2	12	1	16	3	NSa	N	NSM	*	1	NSa	N	NS	Ga.					
1	N	1	N	1	Y	3	N	3	R	N	3	R	N	3	R	15	2	12	1	12	2	NSa	N	NSM	*	1	NSa	Y	2	Idaho				
1	N	2	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	NS	NR	*	1	16	2	NSa	Y	NSM	*	1	NSa	N	4	Ill.			
1	N	1	N	NR	NR	2	N	3	Y	3	R	Y	3	R	Y	NR	*	3	NS	1	18	3	NS	N	XX	*	1	W	N	4	Ind.			
1	N	1	N	NR	2	Y	3	Y	3	R	Y	3	R	Y	1	NS	NS	3	NS	1	16	3	NSa	N	XX	*	1	NSa	N	4	Iowa			
1	Y	1	N	NR	2	N	3	Y	3	R	Y	3	R	Y	3	R	15	3	15	1	16	3	A/W	Y	XX	*	1	W	N	4	Kan.			
1	NNR	NNR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	NR	*	1	NS	NSM	*	NSM	*	NSM	*	NS	NS	Ky.						
1	N	1	NR	1	N	3	Y	3	R	Y	3	R	Y	3	R	NR	*	2	12	1	12	2	NSa	Y	XX	*	Prohibited	NS	La.					
1	N	1	N	1	Y	3	N	3	R	N	3	R	N	3	R	NR	*	2	12	1	12	2	A/W	Y	XX	*	1	NS	N	NS	Me.			
1	N	1	N	NR	2	Y	3	Y	3	R	Y	3	R	Y	NR	*	NR	*	1	16	3	NSa	Y	XX	*	1	NSa	N	4	Md.				
1	N	1	N	NR	1	Y	3	Y	3	R	Y	NP	*	NR	*	NR	*	NR	*	NSM	*	NSM	*	NSM	*	1	NSa	Y	NS	Mass.				
1	N	1	N	NR	1	N	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	12	2	A/W	N	XX	*	2	A/W	N	NS	Mich.			
1	N	1	N	NR	3	Y	3	R	Y	3	R	Y	3	R	NR	*	3r	24	1	16	4	A/W	Y	XX	*	2	W	Y	4	Minn.				
1	N	1	N	NR	3	Y	3	R	Y	NSM	*	3	R	15	NR	*	1	16	2	NS	Y	XX	*	1	NS	N	4	Miss.						
1	N	1	N	NR	3	Y	3	R	Y	3	R	Y	3	R	15	2	NS	1	16	3	Ye/AW	N	XX	*	1	Ye/AW	N	4	Mo.					
1	N	1	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	NR	*	2	14	1	16	3	NSb	Y	XX	*	1	NS	Y	NS	Mont.				
1	N	1	N	NR	1	Y	3	Y	NR	*	3	R	Y	NR	*	2	NS	1	12	2	NSb	Y	NSM	*	1	NSb	Y	NS	Nebr.					
1	N	1	N	1	Y	3	Y	3	R	Y	NSM	*	3	R	15	2	NS	1	12	3	NS	N	XX	*	1	NS	N	4	Nev.					
1	N	1	N	1	Y	2	Y	2	R	Y	2	R	Y	2	R	20	NR	*	1	12	3	NS	Y	2	A	Y	2	NS	Y	4	N. H.			
1	N	1	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	NR	*	1	18	2	A/W	Y	XX	*	1	NSa	Y	4	N. J.				
1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	2	NS	Y	XX	*	2	NS	Y	4	N. M.				
1	N	1	N	NR	1	Y	2	Y	2	R	Y	2	R	Y	2	R	NR	*	1	NS	NSM	*	NSM	*	NSM	*	NS	Y	NS	N. C.				
1	N	1	N	NR	3	Y	3	R	Y	NP	*	2	R	NS	2	12	1	12	2	NS	Y	XX	*	2	NS	Y	2	N. D.						
1	N	1	N	NR	2	Y	3	Y	3	R	Y	NP	*	3	R	15	2	12	1	16	3	W	N	NS	Ye/AW	N	1	W	N	NS	Ohio			
1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	2	NSa	Y	XX	*	2	NSa	Y	4	Oklahoma				
1	N	1	N	NR	1	Y	3	N	3	R	N	3	R	Y	NR	*	3	12	1	12	3	NSa	Y	XX	*	1	NS	Y	4	Ore.				
1	N	1	N	NR	1	N	3	Y	3	R	Y	3	R	Y	NR	*	3	12	1	12	3	W	Y	2	A/W	Y	1	NS	N	4	Penna.			
1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	NR	*	1	12	2	A/W	Y	XX	*	NSM	*	NSM	*	NS	NS	R. I.			
1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	3	NS	Y	XX	*	1	NS	N	4	S. C.				
1	N	1	N	NR	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	3	NS	Y	XX	*	1	NS	N	4	Tex.					
1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	12	2	NS	N	XX	*	2	NSa	N	4	Utah				
1	N	1	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	16	2	NS	Y	2	NS	Y	NS	Vt.					
1	Y	1cc	Y	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	NR	*	2	12	1	12	2	A/W	Y	2	A/W	Y	1	W	Y	4	Va.	
1	N	2	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	20	2	NS	1	12	1	12	2	NSa	Y	2	A/W	Y	1	W	N	4	Wash.
1	N	1	N	1	Y	3	Y	3	R	N	NR	*	3	NS	15	2	12	1	12	NSM	*	NSM	*	NSM	*	1	NS	N	NS	W. Va.				
1	N	1	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	20	2	NS	1	12	2	NSa	Y	NS	NSa	Y	2	W	Y	4	Wisc.		
1	N	1	N	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	NR	*	NR	*	2	NSa	Y	XX	*	2	NSa	Y	NS	Wyo.				

# POWER RATINGS of

Showing maximum and net horsepower, maximum torque, weight

ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (in.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.) <sup>*</sup>	Compression Ratio	TORQUE at R.P.M. (lb. ft.)	Engine Weight Without Carburetor or Ignition (lb.)	ENGINE MAKE AND MODEL	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.) <sup>*</sup>	Compression Ratio	TORQUE at R.P.M. (lb. ft.)	Engine Weight Without Carburetor or Ignition (lb.)	
		With Bare Engine	With Standard Accessories						With Bare Engine	With Standard Accessories					
AUTOCAR								HALL-SCOTT							
377	6-4x5	119-2800	.....	377.0	5.90	292-1400 (BE)	1230	H-130	122-2800	107-2800	425.6	4.96	288-1000 (BE)	1252*	
447	6-4½x5½	145-2700	.....	447.0	5.90	352-1300 (BE)	1385	(H) 135	140-2800	122-2800	477.1	5.50	340-1000 (BE)	1265*	
501	6-4½x5½	165-2700	.....	501.0	5.90	402-1100 (BE)	1395	(H) 136	157-2800	136-2800	477.1	6.50	380-1600 (BE)	1293	
BUDA								(H) 504	180-2500	159-2500	504.0	6.00	425-1600 (BE)	1275	
(Bus) HP-326	6-3½x4½	78-2400	66-2400	326.0	5.40	220-1100 (BE)	885	(Bus) (H) 180-1,	208-2200	193-2200	707.0	6.00	540-1500 (BE)	1786	
(Bus) K-428	6-4½x5½	107-2400	95-2400	428.0	5.33	276-1100 (BE)	905	(Bus) (H) 190-2,	220-2200	200-2200	779.0	5.60	625-1300 (BE)	1786	
LO-525	6-4½x5½	157-2400	139-2400	525.0	5.00	400-1200 (BE)	1195	(Bus) (H) 190-1,	190-3	235-2200	215-2200	779.0	6.00	640-1400 (BE)	1970
6-MO-893	6-5½x6	199-2000	170-2000	893.0	5.50	670-1000 (BE)	2400	6-5½x6	200-1800	180-1800	1090.0	5.70	685-1200 (BE)	1950*	
6-MO-970	6-5½x6½	200-1800	171-1800	970.0	5.43	720-800 (BE)	2400	6-5½x7	286-1800	260-1800	1090.0	5.70			
CHEVROLET								HERCULES							
1950	6-3½x3½	105-3600	98-3500	235.5	6.70	193-1100 (EA)	596	ZXA	23-3800	19-3800	58.8	6.10	37-1800 (BE)	179	
1950	6-3½x3½	102-3600	95-3500	235.5	6.70	193-1100 (EA)	613	ZXB	25-3800	21-3800	64.9	6.10	39-1800 (BE)	179	
1950	6-3½x3½	92-3400	85-3300	235.5	6.70	.....	604	IXA	40-3200	34-3200	113.0	5.50	79-2000 (BE)	285	
1950	6-3½x3½	92-3400	85-3300	216.5	6.60	176-1000 (EA)	583 <sup>△</sup>	IXB	47-3200	40-3200	133.0	5.50	92-1800 (BE)	293	
CONTINENTAL								JXAE	52-2900	44-2900	164.0	6.70	121-1400 (BE)	470	
F-4124	4-3x4½	46-3000	.....	123.7	6.50	86-1400 (BE)	395	JXAD	60-2900	51-2900	188.0	6.70	139-1400 (BE)	470	
F-4140	4-3½x4½	52-3000	.....	139.6	6.30	108-1400 (BE)	395	QXA	64-3200	54.5-3200	190.0	6.50	132-1300 (BE)	440	
F-4162	4-3½x4½	58-3000	.....	162.4	6.10	122-1600 (BE)	395	QXB	69-3200	59-3200	205.0	6.50	142-1400 (BE)	440	
F-6186	6-3½x4½	59-3000	.....	185.6	6.40	139-1000 (BE)	515	QXC	7.5-3200	66-3200	221.0	6.50	159-400 (BE)	440	
F-6209	6-3½x4½	70-3000	.....	209.4	6.10	153-1200 (BE)	515	QXLD	91-3200	77-3200	236.7	6.50	189-1400 (BE)	445	
F-6226	6-3½x4½	72-3000	.....	226.0	6.00	168-1000 (BE)	515	JXE	91-3200	77-3200	245.0	6.50	184-1400 (BE)	590	
M-6271	6-3½x4½	89-2800	.....	270.9	6.00	203-1200 (BE)	755	JXB	98-3200	83-3200	263.0	6.50	190-1400 (BE)	605	
M-6290	6-3½x4½	93-2800	.....	289.9	6.00	217-1000 (BE)	755	JXC	103-3200	87.5-3200	282.0	6.50	207-1400 (BE)	605	
M-6330	6-4x4½	104-2800	.....	329.4	6.10	245-1000 (BE)	755	JXD	113-3000	98-3000	320.0	6.50	240-1200 (BE)	605	
B-6371	6-4½x4½	100-2600	.....	370.9	6.00	278-1000 (BE)	870	JXL	126-3200	111-3200	339.0	6.90	272-1400 (BE)	630	
T-6371	6-4½x4½	126-2600	.....	370.9	5.78	294-1000 (BE)	1070	WXC-3	131-2600	111-2600	383.0	6.60	296-1400 (BE)	820	
B-6427	6-4½x4½	127-2600	.....	427.2	5.90	323-1200 (BE)	875	WXLC	123-2600	104-2600	358.0	6.60	275-1200 (BE)	811	
T-6427	6-4½x4½	145-2600	.....	427.2	5.85	338-1000 (BE)	1075	WXLC-3	129-2600	118-2600	404.0	6.60	312-1300 (BE)	825	
U-6501	6-4½x5½	170-2400	.....	501.0	5.90	390-2400 (BE)	.....	TDXB	160-2600	136-2600	474.0	6.50	366-1400 (BE)	1345	
R-6513	6-4½x5½	170-2600	.....	512.8	5.90	400-1200 (BE)	1525	RXB	137-2400	116-2400	501.0	6.50	350-1200 (BE)	1000	
R-6572	6-4½x5½	189-2600	.....	577.1	5.90	440-1200 (BE)	1525	RXC	143-2400	121-2400	529.2	6.50	372-1200 (BE)	1010	
R-6802	6-4½x5½	199-2600	.....	602.0	5.80	464-1200 (BE)	1525	RXL	146-2400	124-2400	529.2	6.20	408-1100 (BE)	1195	
S-6749	6-5½x5½	247-2600	.....	748.8	6.10	576-1400 (BE)	1865	RXLH	154-2400	131-2400	558.0	6.50	430-1100 (BE)	1195	
DODGE								HXB	180-2600	153-2600	558.0	6.50	443-1400 (BE)	1470	
T-142, T-144	6-3½x4½	96-3600	82-3600	217.8	6.60	172-1200 (BE)	500	HXC	159-2000	135-2000	707.0	5.75	502-900 (BE)	1810	
T-146	6-3½x4½	102-3600	83-3200	230.2	6.70	187-1200 (BE)	525	HXD	175-2000	149-2000	779.0	5.75	555-900 (BE)	1810	
T-164, T-165	6-3½x4½	94-3200	83-3200	230.2	6.70	186-1200 (BE)	540	HXE	175-2000	149-2000	855.0	5.75	645-900 (BE)	1830	
T-137	6-3½x4½	94-3200	78-3200	230.2	6.70	186-1200 (BE)	570		227-2000	193-2000	935.0	6.20	750-1000 (BE)	1830	
T-148, TX-148															
T-152, TX-152	6-3½x4½	109-3600	91-3200	236.6	6.60	192-1200 (BE)	575	INTERNATIONAL							
T-150, TX-150								SD-220	100-3600	90-3600	220.5	6.50	167-1200 (EA)	607	
T-154, TX-154	6-3½x4½	114-3600	98-3200	250.6	6.60	204-1200 (BE)	590	SD-240	108-3600	93-3400	240.3	6.50	186-1100 (EA)	607	
T-156	6-3½x4½	122-3200	106-3200	306.0	6.46	245-1200 (BE)	850	BD-269	100-3000	38.6-2800	269.1	6.32	216-1000 (EA)	781	
T-158, TX-158	6-3½x5½	128-3000	111-2800	331.3	6.46	270-1200 (BE)	850	RD-372	144-3200	128-2800	372.1	6.30	280-1000 (EA)	937	
FORD								RD-406	154-3200	138-2250	405.9	6.30	314-1000 (EA)	942	
(Bus) 8MB	6-3½x4½	104-3000	86-3000	254.0	6.8	212-1200 (BE)	539	RD-450	162-3000	146-2800	451.0	6.20	354-1000 (EA)	948	
7HT	6-3½x4½	85-3300	87-3100	226.0	6.8	180-1200 (BE)	500	JACBS							
8RT	6-3½x4½	100-3800	90-3500	239.0	6.8	180-2000 (BE)	534	O-360-U	8-4½x4	150-2800	361.0	6.50	310-1700 (BE)	425	
8EQ	6-3½x4½	145-3600	127-3300	337.0	6.4	255-1800 (BE)	780	LE ROI							
8MTH	6-3½x4½	110-3400	100-3150	254.0	6.80	212-1200 (BE)	523	H540	8-4½x4½	175-2400	540.0	5.6	417-900 (EA)	1300	
G. M. C.								EN354A†	6-3½x3½	119-2700	102-2700	354.0	5.50	246-1300 (EA)	985
228	6-3½x3½	96-3200	86-3200	228.0	6.75	178-1200 (BE)	.....	EN354A†	6-3½x5½	121-2700	108-2700	354.0	5.50	257-1400 (EA)	985
248	6-3½x3½	110-3600	95-3200	248.5	6.75	95-1000 (BE)	.....	EN431A	142-2500	124-2500	431.0	6.32	311-1200 (EA)	1525	
270	6-3½x4	120-3600	103-3200	269.5	6.75	212-1600 (BE)	.....	EN471A	6-4½x5½	150-2400	134-2400	471.0	6.12	360-1000 (EA)	1600
318	6-3½x4½	136-3400	113-3200	308.2	6.50	245-800 (BE)	.....	EN510A	6-4½x5½	158-2400	140-2400	510.0	6.07	383-1000 (EA)	1555
360	6-4½x4½	150-3200	127-3000	308.0	6.50	289-800 (BE)	.....	EN510A	6-4½x5½	158-2400	139-2400	510.0	6.07	366-1000 (EA)	1555
426	6-4½x5	177-3200	149-3000	425.6	6.50	337-900 (BE)	.....	ENF510A	6-4½x5½	161-2550	150-2550	510.0	6.34	398-1200 (EA)	1594
503	6-4½x5½	190-3000	165-2800	502.7	6.50	415-800 (BE)	.....	EN672	6-4½x6	187-2400	165-2000	672.0	6.15	490-1150 (EA)	1696

ABBREVIATIONS

\*—With ignition and carburetor.

\*\*—Supercharged.

■—Without fan or muffler.

BE—Bare engine.

EA—Engine with standard accessories.

△—Weight for  $\frac{1}{2}$ -ton trucks, 573 lb.

(H)—Horizontal.

● SELECTION & OPERATION ●

# TRUCK and BUS ENGINES

and piston displacement for both gasoline and diesel types

ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.				TORQUE	ENGINE MAKE AND MODEL	MAX. BRAKE H.P. at R.P.M.				TORQUE	
		With Bare Engine	With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio			With Bare Engine	With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio		
MACK—Continued							CUMMINS						
EN707A††	6-5x6	196-2000	179-2000	707.0	6.10	544-1100 (EA)	A-800	6-4x5	■100-2200	■85-2200	377	18.00 275-1200	
EN707A†	6-5x6	191-2000	166-2000	707.0	6.10	538-1100 (EA)	H-400	6-4½x6	■100-1800	■83-1800	448	17.00 340-800	
ENF707A	6-5x6	209-2250	199-2250	707.0	6.10	561-1200 (EA)	H-600	6-4½x6	■150-1800	■125-1800	672	17.00 500-800	
REO							**HS-600	6-4½x6	■200-1800	■175-1800	672	14.00 625-1400	
GC-245	6-3½x4½	89-3100	—	245.0	6.20	191-1200 (BE)	NH-800	6-5½x6	■200-2100	■174-2100	743	15.50 535-1400	
GC-288	6-3½x5	96-3000	—	288.0	6.20	225-1200 (BE)	**NHS-800	6-5½x6	■275-2100	■240-2100	743	13.50 710-1800	
GC-310	6-3½x5	101-3000	—	310.0	6.20	243-1000 (BE)	HR-600	6-5½x6	■165-1800	■141-1800	743	15.50 540-1000	
OA	6-4½x4½	140-3200	128-3200	331.0	6.40	260-2200 (EA)	HR-400	6-5½x6	■110-1800	■94-1800	495	15.50 360-1050	
OA	6-3½x4½	124-3300	110.53300	292.0	6.50	218-1200 (EA)	**HRS-600	6-5½x6	■225-1800	■191-1800	743	13.50 695-1000	
TWIN COACH							NVH-1200	6-5½x6	■300-2100	■255-2100	743	12.00 800-1400	
FTC-180	6-4½x4½	180-2800	162-2800	404.0	7.50	380-1800 (EA)	**NVHS-1200	12-5½x6	■400-2100	■350-2100	1486	15.50 1075-1200	
WAUKESHA								5500				5000	
(12) FC	4-3½x4	32-2600	24-1800	133.0	5.58	86-1200 (BE)	2-71	2-4½x5	■85-2000	142	17.00 200-1200	770	
(12) XAH	4-3½x4½	43-2200	36-1800	185.0	5.50	120-900 (BE)	3-71	3-4½x5	■100-2000	213	17.00 300-1200	1245	
190GL	6-3½x4	61-1800	61-1800	265.0	6.70	210-900 (BE)	4-71	4-4½x5	■133-2000	284	17.00 400-1200	1380	
(11) 6BZ	6-4x4	105-3000	89-3000	320.0	5.75	235-1000 (BE)	6-71	6-4½x5	■200-2000	426	17.00 600-1200	1655	
(11) 140-GK	6-4½x5½	142-2250	127-2250	525.0	6.00	425-1000 (BE)							
(11) 6SRKR	6-5½x6	128-2250	109-2250	517.0	5.50	369-600 (BE)							
(11) 145-GK	6-5½x6	186-2000	172-2000	779.0	6.20	590-1200 (BE)							
(12) 6WAK	6-6½x6½	235-1800	193-1300	1197.0	5.20	865-900 (BE)							
(11) 145GZ	6-5½x6	220-2000	206-2000	817.0	6.00	615-1200 (BE)							
6MZA	6-4½x4½	128-2800	113-2800	404.0	5.90	290-1000 (BE)							
▼(11) 140GK	6-4½x5½	176-2800	159-2600	525.0	6.40	435-800 (BE)							
▼(11) 140GZ	6-4½x5½	188-2800	171-2800	554.0	6.40	460-800 (BE)							
▼(11) 145GK	6-5½x6	225-2400	207-2400	779.0	6.20	595-1400 (BE)							
180GL	4-3½x3¾	36-2000	31-2000	144.0	6.80	105-800 (EA)							
▼(11) 195GKA	6-4½x6	122-3000	110-3000	320.0	6.20	230-1600 (EA)							
195GK	6-4½x6	105-2400	96-2400	320.0	6.20	232-1500 (EA)							
WHITE													
110A	6-3½x4½	100-3100	270.0	6.21	200-1200 (BE)	1075	DIXC	2-4x4½	■27-1800	23-1800	113	15.50 81-1400	550
116A	6-3½x4½	110-3100	298.0	6.68	230-1200 (BE)	1075	DIXD	2-4½x4½	■27-1600	23.5-1600	127	15.50 91-1300	550
120A	6-3½x4½	114-3000	318.0	6.50	250-1200 (BE)	1070	DIX4B	4-3½x4	■46-3000	39-3000	133	15.00 98-1600	550
130A	6-4x4	120-3000	340.0	6.80	270-1200 (BE)	1075	DIX4D	4-3½x4½	■57-3000	48-3000	165	15.00 122-1600	550
140A	6-3½x4½	125-3000	362.0	6.03	285-1400 (BE)	1070	DOOB	4-3½x4½	■62-2800	53-2800	199	15.00 142-1400	750
150A	6-4x5	130-3000	386.0	6.45	315-1300 (BE)	1070	DOOC	4-4x4½	■70-2600	60-2600	228	15.00 162-1400	750
260A	6-4½x5	170-2800	451.0	6.25	350-1200 (BE)	1409*	DIXD	4-4½x4½	■79-2600	66-2600	255	15.00 182-1400	750
280A	6-4½x5	184-2800	504.0	6.50	405-1200 (BE)	1442*	DIXE	6-3½x4	■92-3000	78-3000	249	15.50 192-1800	780
(Bus) 280TA	6-4½x5	175-2700	504.0	6.00	400-1200 (BE)	1721	DIXB	6-3½x4½	■77-2600	66-2600	260	15.00 179-1300	950
(Bus) 24AK	12-4½x4½	210-2700	681.0	6.00	500-1200 (BE)	2090	DIXC	6-3½x4½	■83-2600	71-2600	298	15.00 208-1300	950
WILLYS							DJXH	6-3½x4½	■99-2800	84-2500	298	15.00 320-1300	930
4-63	4-3½x4½	63-4000	134.2	6.48	105-2000 (BE)	344	DWXC	6-4x4½	■118-2600	100-2600	358	15.00 284-1600	1350
DIESELS							DWXD	6-4½x4½	■135-2800	115-2600	404	15.00 320-1600	1350
BUDA							DWXLD	6-4½x5	■142-2800	121-2600	426	15.00 316-1800	1350
6BD-230	6-3½x4½	60-2400	52-2400	230	15.30	156-1400	DRXB	6-4½x5½	■142-2800	121-2600	426	15.00 316-1800	1350
6BD-273	6-3½x4½	75-2400	65-2400	273	15.00	197-1300	DRXC	6-4½x5½	■147-2200	125-2200	529	15.00 395-1200	1600
6-DT-317	6-3½x5½	90-2300	75-2300	317	14.50	224-1500	DFXB	6-5½x6	■190-2100	162-2100	707	14.80 530-1350	2500
6-DT-468	6-4½x5½	113-2000	97-2000	468	14.20	268.5-1100	DFXC	6-5½x6	■217-2100	184-2100	855	14.80 645-1200	2500
6-DC-844	6-5½x6½	200-2000	176-2000	844	13.00	620-1200	DFXD	6-5½x6	■228-2100	194-2100	895	14.80 680-1200	2500
**8-DCS-844	6-5½x6½	245-2000	211-2000	844	13.00	690-1400	DFXE	6-5½x6	■260-2100	221-2100	935	14.80 750-1200	2575
8-DC-1125	6-5½x6½	240-1800	212-1800	1125	13.00	800-1100	DFXH	6-5½x6	■280-2100	221-2100	935	14.80 750-1200	2575
**8DCS-1125	6-5½x6½	300-2000	300-2000	1125	13.00	970-1250	DNX-V8	8-6½x6	■400-2100	340-2100	1468	14.80 1100-1200	4200
MACK													
END-457	6-4½x5½	112-2200	103-2200	457	13.86	326-1300							
END-510	6-4½x5½	138-2400	123-2400	510	14.92	345-1400							
END-672	6-4½x6	165-2000	154-2000	672	14.62	480-1200							
SHEPPARD													
12D, E & F	6-4½x5	100-2000	75-1800	426	18.0	325-1200							
WAUKESHA													
180DAC	4-3½x3¾	35-2400	28-2400	129	17.00	90-1400							
190DLB	6-3½x4	64-2200	53-1800	265	15.3	184-1200							
148DK	6-5½x6	168-2000	138-2000	779	17.5	530-1200							
6WAKD	6-6½x6½	225-1600	185-1600	1197	16.5	845-900							

†—Updraft carburetor.  
††—Downdraft carburetor.

# TRANSMISSION

## SELECTION & OPERATION

# RATIOS

TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS						TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS					
			Low	Second	Third	Fourth	Fifth	Reverse				Low	Second	Third	Fourth	Fifth	Power Take-off, Opening
<b>FULLER—cont.</b>																	
AR-Aux.	1	1	1.00														
AR-1.63 Aux.	2	1	1.63	1.00													
2A-62 Aux.	2	1	(n)	1.00													
2B-62 Aux.	2	1	1.33	1.00													
2A-92 Aux.	2	1	2.298	1.00													
2B-92 Aux.	1	1	1.313	1.00													
3A-65 Aux.	1	2.221	1.00	.754						R							
3B-65 Aux.	1	1	1.239	1.00	.804					R							
3A-92 Aux.	1	2.09	1.00	.754						R							
3B-92 Aux.	1	1	1.235	1.00	.836					R							
3T-92 Aux.	1	2.09	1.00	.754						(k)							
<b>STUDEBAKER</b>																	
673579	3	3	3.34	1.85	1.00				4.53								
673519	4	3	3.34	1.85	1.00	.700			4.53								
676044-676794	4	4	6.40	3.09	1.69	1.00			7.82	R							
678790	4	4	5.90	3.09	1.69	1.00			7.21	R							
<b>WARNER</b>																	
T9	4	4	6.40	3.09	1.69	1.00			7.82	R							
T9A	4	4	5.901	3.09	1.69	1.00			7.213	R							
T9B	4	4	6.40	3.09	2.21	1.00			7.82	R							
T9C	4	4	6.40	4.07	2.89	1.00			7.82	R							
T87D	3	3	3.714	1.871	1.00				4.588	No							
T80A-T90C	3	3	2.798	1.551	1.00				3.798	No							

**ABBREVIATIONS**

(1)—Spicer Mfg. Co. \*—Transmissions Synchronized.

L—Left side opening.

R—Right side opening.

R-L—Right and left side openings.

(g)—Ratios beyond fifth gear as follows:

6th, 2.30; 7th, 1.76; 8th, 1.462 or 1.711; 9th, 0.00; 10th, 6.36 or .744; Low Rev., 14.93 or 11.64; High Rev., 6.49 or 5.06.

(a)—Optional overdrive .76 or .65 to one.

(b)—Optional second gear 3.27 or 3.08 to one.

(c)—Optional low reverse 6.49 or 5.06 to one.

(d)—Right side only on Model 5A-33—Right and left side on 5B-33.

(e)—Right side only on Model 5A-330—Right and left side on 5B-330.

(f)—Optional fourth gear 1.38 or 1.69 to one.

(k)—Front or Rear—Full Torque.

(m)—8.12 and 4.74.

(n)—1.58 or 2.00.

(h)—Ratios beyond fifth gear as follows:

6th, 1.76; 7th, 1.31; 8th, 1.00; 9th, .835 or .976; 10th, .636 or .744; Low Rev., 8.52 or 6.64; High Rev., 6.49 or 5.06.

## COMPONENT PARTS

Continued from Page 114

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES						ELECTRICAL EQUIPMENT	CLUTCH	UNIVERS- ALS	RUNNING GEAR								
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make				STEERING GEAR Make and Model Number	Hand Brakes Make of Actuation	Brake Drum Make	Wheels—Make	Springs—Make	Frame—Make			
STERLING—(Cont.)																			
186 HWS235		Wau 145GK	Wau	Don	DeL	Zen 29-16	AC	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	
187 HWS160H		Cum HB600	Cum	Don	Cum	.....	Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	
188 HWS235H		Cum HB600	Cum	Don	Cum	.....	Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	
189 HCS195		Wau 140GK	Wau	Don	DeL	Zen IN167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	
190 HCS285, HCS297, HCS330		Wau 145GK	Wau	Don	Cum	Zen 29-16	AC	Yng	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	
191 HCS195H		Cum HB600	Cum	Don	Cum	.....	Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	
192 HCS265H, HCS297H, HCS330H		Cum HBD600	Cum	Don	Cum	.....	Cum	Yng	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	
193 HCS40H		Cum NHBD600	Cum	Don	Cum	.....	Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1800	Gem 550	Own	Tim	Bdd	Mar	
STUDEBAKER																			
194 2R5, 2R10		Own 1R	....	Uni	....	Car BBR1633S	AC	McC	AL	AL	WII	B&B 9A7	Spi 1270	Ro TA12	....	Bdd	MW	Own	
195 2R15		Own 2R	....	Uni	....	Car BBR1633S	AC	McC	AL	AL	WII	B&B 9A7	Spi 1358	Ro TA14	....	MW	MW	Own	
196 2R16A		Own 4R	....	Uni	....	Car BBR1606AA	AC	McC	DR	DR	WII	In "G"	Spi 1358	Ro TA14	....	MW	MW	Own	
197 2R17A		Own 4R	....	Uni	....	Car BBR1606AA	AC	McC	DR	DR	WII	In "G"	Spi 1358	Ro TA14	....	MW	MW	Own	
WARD LA FRANCE																			
198 D1		Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Bld 6N	Ro TA68	....	Tim	Day	Mar	
199 DIC		Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Bld 6N	Ro TA71	....	Tim	Day	Mar	
200 D2K, D2KT2, D2Z		Wau 140GK	Hof	Uni	Mar	Zen 29W14	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spi 1700	Ro TA71	....	Tim	Day	Mar	
201 D3, D3TB		Con R6572	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spi 1700	Ro TA71	....	Tim	Day	Mar	
202 D3S, D3ST8		Con R6602	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spi 1700	Ro TA71	....	Tim	Day	Mar	
203 D5, D5T2, D5TO		Cum HB600	....	....	....	.....	....	....	DR	DR	AL	LR 15 in. SP	Spi 1700	Ro TW74	....	Tim	Day	Mar	
204 D5N		Cum NHB600	....	....	....	.....	....	....	DR	DR	AL	LR 15 in. SP	Spi 1700	Ro TW74	....	Tim	Day	Mar	
205 D1T2		Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Spi 16 or 1700	Ro TA71	....	Tim	Day	Mar	
206 D2KT8		Wau 140GK	Hof	Uni	Mar	Zen 29W14	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spi 1700	Ro TW74	....	Tim	Day	Mar	
WILLYS-OVERLAND																			
207 CJ-3A Jeep		Own	Hof	Oak	Fram	Car W0596S	AC	Har	AL	AL	AW	Aub 8501-23	Spi 1261	Ro T13108	Spi	Khm	Khm	Mat	
208 4-WD Truck		Own	Hof	Oak	Fram	Car YF	AC	Har	AL	AL	AW	Aub 8501-19	Spi 1261	Ro T13017	Spi	Khm	Khm	Mat	
209 473 Series		Own	AC	....	....	Car YF	AC	Har	AL	AL	AW	Aub 8501-18	Spi 1261	Ro T13086	Spi	Khm	Khm	AOS	

# STATE SIZE and

STATE	SIZE RESTRICTIONS					GROSS WEIGHT		(See Boxed NOTE)								PRACTICAL GROSS WEIGHT LIMITS				(In thousands of pounds)			
	Width (Inches)	Height (Feet)	LENGTH			Number of Trailers (Semi-Trailer = $\frac{1}{2}$ )	LEGAL LIMITS		Below Limits Apply to Pneumatic Tires Unless Otherwise Specified														
			Single Unit	Tractor Semi-Trailer	Other Combinations		Minimum Tandem Axle Spacing	Pounds Per Inch of Tire Width	Per Axle (1000 lb.)	4-Wheel Single Unit	6-Wheel Single Unit	4-Wh. Tractor 2-Wh. Semi-Tr.	4-Wh. Tractor 4-Wh. Semi-T.	6-Wh. Tractor 4-Wh. Semi-T.	4-Wh. Truck 6-Wh. Trailer	4-Wh. Truck 4-Wh.	6-Wh. Truck 4-Wh.	6-Wh. Truck 6-Wh. Trailer	4-Wh. Tractor 4-Wh. Semi-T.	4-Wh. Tractor 4-Wh. Semi-T.	6-Wh. Tractor 4-Wh. Semi-T.		
TVX	m	12 $\frac{1}{2}$	35	45	NP	$\frac{1}{2}$	NS	600	18	38	*46.9	*53.9	*53.9	NP	NP	NP	NP	NP	NP	NP	NP	NP	
Ala.	96	12 $\frac{1}{2}$	35	45	NP	$\frac{1}{2}$	NS	700	18	38	*53.6	*54	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	
Ariz.	X	102	13 $\frac{1}{2}$	35	65	65	1 $\frac{1}{2}$	NS	NS	18	36	50	54	64.6	64.6	72	73.2	73.2	73.2	NP	NP	NP	
VX	Ark.	96	12 $\frac{1}{2}$	35 <sup>a</sup>	50	60	1 or $\frac{1}{2}$	48	NS	18	36	50	54	68	76.8	72	76.8	76.8	76.8	76.8	76.8	76.8	76.8
Cal.	X	96	13 $\frac{1}{2}$	35 <sup>a</sup>	60	60	NR	NS	NS-P 600-S	18	36	50	54	68	76.8	72	76.8	76.8	76.8	76.8	76.8	76.8	76.8
Colo.	X	96	12 $\frac{1}{2}$	35	60	60	2	40	500	18-I 16-J	30	46	*54	*72	*73.6	72	*73.6	*73.6	*73.6	*73.6	*73.6	*73.6	*73.6
Conn.	T	102	12 $\frac{1}{2}$	45	45	NP	$\frac{1}{2}$	NS	NS-P 800-S	22.4	32	50	50	50	NP	NP	NP	NP	NP	NP	NP	NP	
Del.	X	96	12 $\frac{1}{2}$	35	50	60	1 $\frac{1}{2}$	48	700	20	26	40c	48c	60c	60c	60c	60c	60c	60c	60c	60c	60c	60c
XVZ	D. C.	96	12 $\frac{1}{2}$	35	50	50	1 or $\frac{1}{2}$	40	NS	22	44	60	65.4	65.4	65.4	65.4	65.4	65.4	65.4	NP	NP	NP	NP
Fla.	X	96	m	12 $\frac{1}{2}$	40a	50	50	1 or $\frac{1}{2}$	40	550	18c	36	54	54	64.6	64.6	64.6	64.6	64.6	NP	NP	NP	NP
Ga.	X	96	13 $\frac{1}{2}$	35	45	45	1 or $\frac{1}{2}$	40	NR	18-I 16-J	36	*46.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9
Idaho		96	14	35	60	65	1 $\frac{1}{2}$	NS	800 <sup>c</sup>	18	36	50	54	68	72	72	72	72	72	72	72	72	72
Illinois		96	13 $\frac{1}{2}$	42	45	45	1 $\frac{1}{2}$	40	800	18	36	41	45	59	59	63	63	72	72	72	72	72	72
Indiana		96	m	12 $\frac{1}{2}$	38 <sup>a</sup>	50	50	1 $\frac{1}{2}$	40	800	18	36	50	54	68	72	72	72	72	72	72	72	72
Iowa	TX	96	12 $\frac{1}{2}$	35 <sup>a</sup>	45	NP	$\frac{1}{2}$	40	NR	18	36	50	54	60.8	60.8	NP	NP	NP	NP	NP	NP	NP	NP
Kansas		96	12 $\frac{1}{2}$	35 <sup>a</sup>	50	50	1 or $\frac{1}{2}$	40	NR	18-I 16-J	36	50	54	63.8	63.8	63.8	63.8	63.8	63.8	NP	NP	NP	NP
Ky.	T	96	12 $\frac{1}{2}$	35	45	NP	$\frac{1}{2}$	NS	600	18	36	42	42	42	42	NP	NP	NP	NP	NP	NP	NP	NP
La.		96	12 $\frac{1}{2}$	35 <sup>a</sup>	50	60	1 or $\frac{1}{2}$	40	NR	18-I 16-J	18b	32b	36b	54b	64b	54b	NP	68b	NP	NP	NP	NP	NP
Maine	X	96	12 $\frac{1}{2}$	45h	45h	45h	1 or $\frac{1}{2}$	48	600	22-G	32	50	50	50	50	50	50	50	50	50	NP	NP	NP
Md.	X	96	NR	55	55	55	NR	NS	600	22.4	44.8	*58.4	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2
Mass.	T	96	NR	35	45	NS	1 or $\frac{1}{2}$	NS	800	22.4	36	50	50	50	50	37	37	51	51	NP	NP	NP	NP
Mich.	P	96	13 $\frac{1}{2}$	35	50	50	1 $\frac{1}{2}$	42	700	18-P 16-S	36-W	50-W	54-W	68-W	76-W	72-W	86-W	86-W	94-W	104-W	104-W	120-W	
Minn.	X	96	12 $\frac{1}{2}$	40	45	45	1 or $\frac{1}{2}$	40	NR	18-P 10.8-S	36	*46.9	*54	*57.7	*57.7	*57.7	*57.7	*57.7	*57.7	NP	NP	NP	NP
Miss.	X	96	12 $\frac{1}{2}$	35	45	45	1 or $\frac{1}{2}$	40	Table	18-I 16-J	27	37.5	45	52.6	52.6	52.6	52.6	52.6	52.6	NP	NP	NP	NP
Mo.	X	96	12 $\frac{1}{2}$	35	45	45	1 $\frac{1}{2}$	40	600	16-J 18-I	36	*46.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	NP	NP	NP	NP
Mont.	X	96	13 $\frac{1}{2}$	35 <sup>a</sup>	60	60	1 or $\frac{1}{2}$	40	NS	18	36	50	54	68	73.2	72	73.2	73.2	73.2	NP	NP	NP	NP
Neb.	X	96	12 $\frac{1}{2}$	35	50	50	1 $\frac{1}{2}$	NS	NR	18	36	50	54	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6
Nev.	X	NR	NR	NR	NR	NR	42	600	18	36	46.4	54	66.8	76.8	76.8	72	76.8	76.8	76.8	76.8	76.8	76.8	76.8
N. H.		96	13 $\frac{1}{2}$	35	45	45	NR	48	NS	NR	30	40	50	50	50	50	50	50	50	50	50	50	50
N. J.		96	12 $\frac{1}{2}$	35	45	50	1 or $\frac{1}{2}$	NS	Table	Table	30	40	60	60	60	60	60	60	60	60	60	NP	NP
N. M.	VX	96	12 $\frac{1}{2}$	40	65	65	1 or $\frac{1}{2}$	40	600	18	36	*54	54	*72	*72.7	72	*72.7	*72.7	*72.7	NP	NP	NP	NP
N. Y.	X	96	13	35	50	50	1 or $\frac{1}{2}$	46	800-P 640-S	22.4	36	44	58.4	*61.5	*61.5	*61.5	*61.5	*61.5	*61.5	NP	NP	NP	NP
N. C.	Z	96	12 $\frac{1}{2}$	35	48	48	1 or $\frac{1}{2}$	48	600	18-I 16-J	30	44	46.2n	58.8n	58.8n	58.8n	58.8n	58.8n	58.8n	58.8n	58.8n	58.8n	58.8n
N. D.	X	96	12 $\frac{1}{2}$	35	45	45	1 or $\frac{1}{2}$	40	550	18-P 16-S	38	50.5	57	*67.6	*67.6	76	78	78	78	78	78	78	78
Ohio	X	96	m	12 $\frac{1}{2}$	35	45	60	NR	NS	650	18-P 16-S	38	50.5	57	*67.6	*67.6	76	78	78	78	78	78	78

# WEIGHT LIMITS

## SELECTION & OPERATION

STATE	SIZE RESTRICTIONS				GROSS WEIGHT		PRACTICAL GROSS WEIGHT LIMITS (In thousands of pounds)													
	Width (Inches)	Height (Feet)	LENGTH		(See Boxed NOTE)		(LEGAL LIMITS)	Below Limits Apply to Pneumatic Tires Unless Otherwise Specified												
			Single Unit	Tractor Semi-Trailer	Other Combinations	Number of Trailers (Semi-Trailer = $\frac{1}{2}$ )		4-Wheel Single Unit	6-Wheel Single Unit	4-Whe. Tractor 2-Whe. Semi-Tr.	4-Whe. Tractor 4-Whe. Semi-T.	6-Whe. Tractor 4-Whe. Semi-T.	4-Whe. Truck 4-Whe. Trailer	4-Whe. Truck 6-Whe. Trailer	6-Whe. Truck 4-Whe. Trailer	6-Whe. Truck 6-Whe. Trailer	4-Whe. Tractor 2-Whe. Semi-T. 4-Whe. Trailer	4-Whe. Tractor 4-Whe. Semi-T. 4-Whe. Trailer	6-Whe. Tractor 4-Whe. Semi-T. 4-Whe. Trailer	
Okla.	X	96	m 12½	35r	50	50	1½	40	650	18	36	50	54	60	60	60	60	60	60	60
VX	Ore.	96	12½	35	55	60	NR	40	600	18	36	54	36b	50b	65.4	54b	72	72	72	72
Pa.	96	m 12½	35k	45	50	1 or ½	36	800	20	H 30	H 40	H 45	H 45	H 45	H 56	H 62	H 62	NP	NP	NP
R. I.	102	12½	35k	45	45	1 or ½	NS	800	22.4	32	44	50	50	50	64	72	72	80	NP	NP
S. C.	X	96	12½	40a	50	50	1 or ½	40	NR	20-I 16-J	40	52	60	68.3	68.3	68.3	68.3	68.3	NP	NP
S. D.	X	96	13	35ak	50	50	1 or ½	40	600	18-I 16-J	36	50	54	64.6	64.6	64.6	64.6	64.6	NP	NP
Tenn.	X	96	12½	35	45	45	1 or ½	NS	NS	18	36	42	42	42	42	42	42	NP	NP	NP
Tex.	X	96	m 12½	35	45	45	1 or ½	40	650-I 600-J	18-I 16-J	36	*46.9	48	48	48	48	48	NP	NP	NP
Utah	X	96	14	45	60	60	2	40	NS	18-P 13.5-S	36	51	54	69	79.9	72	79.9	79.9	79.9	79.9
Vt.	96	12½	50	50	50	1 or ½	40	600	NR	30	40	50	50	50	50	50	50	NP	NP	NP
Va.	VZ	96	12½	33g	45	45	1 or ½	40	650	18	32	40	50	50	50	50	50	NP	NP	NP
Wash.	X	96	12½	35	60	60	1 or ½	42	500	18	28	36	46	60	68	60	60	68	72	NP
W. Va.	W <sup>1</sup> XZ	96	12½	35	45	45	NR	40	NS	18-PB	36-PWB	54-PWB	54-PWB	72-PWB	90-PWB	72-PWB	90-PWB	90-PWB	*102.4PB	90-PWB
Wis.	VX	96d	12½	35	45	45	1 or ½	40	800	19-C 12-D	38-C	*53-C	57-C	*63-C	*63C	*63C	*63C	*63C	NP	NP
Wyo.	X	96	12½	40	60	60	1 or ½	40	NS	18	36	50	54	68	73.9	72	73.9	73.9	73.9	73.9

\*See explanation in Note at right

a—Vehicles over 35 ft. length must have 3 axles.

b—Plus weight on front axle of motor vehicle.

c—with power brakes.

d—104 inches for urban buses.

e—Buses allowed 35 ft. length.

f—Trailers are limited to 26 ft.

g—Buses permitted 40 ft.

h—Automobile transporters allowed 13½ ft. height; in Okla. 13 ft.

i—including tolerance.

j—Graduated according to tire width.

k—26,000 lbs. on tandem axles 3 ft. 6 in. apart; applies June 1 to February 28; differs with season.

l—500 lbs. when total tires under 30 inches wide.

m—Buses permitted 45 ft.

Table—There is a table of axle weights based upon tire widths.

NP—Not permitted.

NR—No restriction.

NS—Not specified.

P—Pneumatic tires.

S—Solid tires.

B—in "Industrial Areas"—varies for different "areas."

C—Permissible on "Class A" highways.

D—Permissible on "Class B" highways.

G—Axles less than 10 ft. apart limited to 16,000 lbs. per axle.

H—Maximum shown. In practice, permissible gross weight depends on chassis weight.

I—Permissible on balloon tires.

J—Permissible on other than balloon tires.

L—Buses permitted 22,500 maximum net weight.

T—with the following exceptions full trailers are permitted the same gross weight as other single units:

### NOTE ON "W" AND ASTERISK

Except when shown by asterisk or when followed by the letter "W," the above gross weight limits are the limits fixed by state law.

When shown by asterisk the above limits are computations made by the National Highway Users Conference to show what it considers to be practical gross weights where gross weights are arrived at by application of one of the formulae shown below under Footnote "X." In making these computations, wheel base was arrived at by deducting 8 ft. total over-hang front and rear from permissible overall length of unit or combination; tandem axles were considered to be a minimum permissible distance apart; H-20 bridge formula was used in West Virginia. When actual over-hang is less than 8 ft. additional gross weight will be possible.

When followed by the letter "W," the limits shown are maximum possible weights where gross weight is determined by permissible axle weight. These limits are possible only when each axle carries a gross weight equal to the permissible axle limit as shown.

Ala., Iowa, Conn., Ky.—Full trailers prohibited.

Mass.—Trailers limited to 1,000 lbs. capacity.

V—Solid tires prohibited.

W—See Note above.

W1—Maximum gross when all axles carry maximum load—See "Note."

X—States where gross weight is determined by formula or by table of axle spacing. (See State under "Bridge Formulas" in next column and formula computations on next page.)

Z—See "Restrictions Peculiar to Certain States" on next page.

### BRIDGE FORMULAS

Ala.—700 (L plus 40) on any unit or combination.

Ariz.—800 (L plus 40) new vehicles; 850 (L plus 40) vehicles registered before June 9, 1945, until January 1, 1955; 700 (L plus 40) new vehicles with axle spacing 18 feet or less; 750 (L plus 40) vehicles registered before June

9, 1945 until January 1, 1955, axle spacing between 14 and 18 feet.

Ark.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 73,280 lbs. if spacing is 57 ft. or more.

Calif.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 76,800 lbs. if spacing is 56 feet or more.

Colo.—800 (L plus 40).

Del.—Gross weights graduated from 36,000 lbs. if axle spacing is 4 ft. to 60,000 lbs. if spacing is 39 feet or more.

D. C.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 65,400 lbs. if spacing is 46 ft. or more.

Fla.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 64,650 lbs. if spacing is 45 feet or more.

Ga.—700 (L plus 40).

Idaho—Gross weights graduated from 30,500 lbs. if axle spacing is 3 feet to 72,000 lbs. if spacing is 56 feet or more.

Mo.—700 (L plus 40) when axles are 18 feet or more apart; otherwise 650 (L plus 40).

Miss.—Gross weights graduated from 28,650 lbs. if axle spacing is 4 ft. to 52,650 lbs. if spacing is 30 ft. or more.

Minn.—750 (L plus 40) any unit or combination.

Minn.—750 (L plus 40) when axles are 18 feet or more apart; otherwise 650 (L plus 40).

Utah—Gross weights graduated from 33,000 lbs. if axle spacing is 4 ft. to 79,990 lbs. if spacing is 54 feet or more.

Wash.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if axle spacing is 57 feet or more.

W. Va.—1330-1000-670 (L plus 40) applies to highways dependent on type of bridges thereon.

Wyo.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 73,950 lbs. if spacing is 4 feet to 57 feet.

from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if spacing is 45 feet or more.

Nev.—Gross weights graduated from 30,100 lbs. if axle spacing is 3 feet to 76,800 lbs. if spacing is 56 feet or more.

N. M.—750 (L plus 40) two or more consecutive axles and any unit or combination.

N. Y.—750 (L plus 40) three or more consecutive axles and any unit or combination.

N. Dak.—750 (L plus 40) any unit or combination.

Ohio—800 (L plus 47½).

Okla.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if spacing is 39 feet or more.

Or.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if spacing is 4 feet to 57 feet.

S. C.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 68,350 lbs. if axle spacing is 50 ft. or more.

S. D.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if axle spacing is 4 feet to 45 feet or more.

Tenn.—700 (L plus 40).

Texas—700 (L plus 40).

Utah—Gross weights graduated from 33,000 lbs. if axle spacing is 4 feet to 79,990 lbs. if spacing is 54 feet or more.

Wash.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if axle spacing is 57 feet or more.

131

# STATE SIZE and WEIGHT LIMITS

Continued from Page 131

## GROSS WEIGHTS COMPUTED BY FORMULAS

**Computation of Gross Weights according to formulas, based on distance (in feet) between first and last axles, for States Identified by State Size & Weight Limits chart by Footnote "X." It should be remembered that the figures in each column represent only a mathematical extension and are governed by Legal Overall Length Limits for single units and combinations of particular states. Also, that formula computations are superseded in some instances by specific limits given in the chart.**

"L" (See Note Below)	Minnesota, <sup>6</sup> N. Mex., <sup>6</sup> Mo.	West Virginia (H-10 Bridges)	Ala., Ariz., <sup>9</sup> Georgia, Tenn., Texas, Mo.	Ariz., <sup>10</sup> Md., Minn., <sup>7</sup> N. Mex., <sup>7</sup> N. Y., N. Dak.	West Virginia (H-15 Bridges)	West Virginia (H-20 Bridges)	Colorado, Arizona <sup>12</sup>	Arizona <sup>11</sup>	Ohio	Wisconsin
	550 (L + 40)	670 (L + 40)	700 (L + 40)	750 (L + 40)	1000 (L + 40)	1330 (L + 40)	800 (L + 40)	850 (L + 40)	800 (L + 47½)	1000 (L + 26)
10 ft.	32500 lb.	33500 lb.	35000 lb.	37500 lb.	50000 lb.	66500 lb.	..... lb.	..... lb.	46000 lb.	36000 lb.
11	33150	34170	35700	38250	51000	67830	.....	.....	46800	37000
12	33800	34840	36400	39000	52000	69160	.....	.....	47600	38000
13	34450	35510	37100	39750	53000	70490	.....	.....	48400	39000
14	35100	36180	37800	40600	54000	71820	43200	.....	49200	40000
15	35750	36850	38500	41250	55000	73150	44000	.....	50000	41000
16	36400	37520	39200	42000	56000	74480	44800	.....	50800	42000
17	37050	38190	39900	42750	57000	75810	45600	.....	51600	43000
18	37700	38860	40600	43500	58000	77140	46400	.....	52400	44000
19	38350	39530	41300	44250	59000	78470	47200	.....	53200	45000
20	39000	40200	42000	45000	60000	79800	48000	.....	54000	46000
21	39650	40870	42700	45750	61000	81130	48800	.....	54800	47000
22	40300	41540	43400	46500	62000	82460	49600	.....	55600	48000
23	40950	42210	44100	47250	63000	83790	50400	.....	56400	49000
24	41600	42880	44800	48000	64000	85120	51200	.....	57200	50000
25	42250	43550	45500	48750	65000	86450	52000	55250	58000	51000
26	42900	44220	46200	49500	66000	87780	52800	56100	58800	52000
27	43550	44890	46900	50250	67000	89110	53600	56950	59600	53000
28	44200	45560	47600	51000	68000	90440	54400	57800	60400	54000
29	44850	46230	48300	51750	69000	91770	55200	58650	61200	55000
30	45500	46900	49000	52500	70000	93100	56000	59500	62000	56000
31	46150	47570	49700	53250	71000	94430	56800	60350	62800	57000
32	46800	48240	50400	54000	72000	95760	57600	61200	63600	58000
33	47450	48910	51100	54750	73000	97090	58400	62050	64400	59000
34	48100	49580	51800	55500	74000	98420	59200	62900	65200	60000
35	48750	50250	52500	56250	75000	99750	60000	63750	66000	61000
36	49400	50920	53200	57000	76000	101080	60800	64600	66800	62000
37	50050	51590	53900	57750	77000	102410	61600	65450	67600	63000
38	50700	52260	54600	58500	78000	103740	62400	66300	68400	64000
39	51350	52930	55300	59250	79000	105070	63200	67150	69200	65000
40	52000	53600	56000	60000	80000	106400	64000	.....	70000	66000
41	52650	54270	56700	60750	81000	107730	64800	.....	70800	67000
42	53300	54940	57400	61500	82000	109060	65600	.....	71600	68000
43	53950	55610	58100	62250	83000	110390	66400	.....	72400	69000
44	54600	56280	58800	63000	84000	111720	67200	.....	73200	70000
45	55250	56950	58500	63750	85000	113050	68000	.....	74000	71000
46	55900	.....	60200	64500	.....	.....	68800	.....	74800	.....
47	56550	.....	60900	65250	.....	.....	69600	.....	75600	.....
48	57200	.....	61600	66000	.....	.....	70400	.....	76400	.....
49	57850	.....	62300	66750	.....	.....	71200	.....	77200	.....
50	58500	.....	63000	67500	.....	.....	72000	.....	78000	.....
51	59150	.....	63700	68250	.....	.....	72800	.....	.....	.....
52	59800	.....	64400	69000	.....	.....	73600	.....	.....	.....
53	60450	.....	65100	69750	.....	.....	74400	.....	.....	.....
54	61100	.....	65800	70500	.....	.....	75200	.....	.....	.....

"L"—distance in feet between first and last axles of group of axles considered.

\*—Vehicles with axles spaced 18 feet or less.

†—Vehicles with axles over 18 feet apart.

—In Arizona this applies (up to 18 feet) to any two or more axles on any vehicle or combination which was first registered on or after June 9, 1945.

<sup>10</sup>—This applies in Arizona to any vehicle or combination which was first registered prior to June 9, 1945, having a group of two or more axles, where the distance between the first and last axles of the group is between 14 and 18 feet, inclusive.

<sup>11</sup>—This applies to any vehicle or combination first registered prior to June 9, 1945, where the total wheel base is between 25 and 45 feet, inclusive.

<sup>12</sup>—New Vehicles. This formula used in computations shown in chart.

## RESTRICTIONS PECULIAR TO CERTAIN STATES

N. C.—Over 40,000 lbs. must have 300 cubic inches piston displacement. Over 50,000 lbs. must have 350 cubic inches.

VA.—Two-axled vehicles with six wheels permitted 32,000 lbs. gross; otherwise 24,000 lbs.

W. VA.—No unit may carry a load more than 100 per cent greater than its registered capacity if registered for not over two tons; or more than 50 per cent greater if registered for over two but not over four tons; or more than 25 per cent greater if registered for over four tons.

# DIESEL FUEL SPECIFICATIONS

The increase in the use of diesel-powered vehicles has spurred interest in diesel fuel specifications. CCJ meets the demand for this information with the table below, which represents the latest available data

DIESEL FUEL TRADE NAME	Cetane No.	Viscosity SSU 100 Deg. F.	Water & Sediment Max. %	Carbon Residue Max. %	Ash Max. %	Flash Min. Deg. F.	Sulphur Max. %	A.S.T.M. DISTILLATION				Gravity	Pour Point Max. Deg. F.	AREAS OF DISTRIBUTION
								10%	50%	90%	End Point			
American Oil Co. Amo-Fuel No. 2.....	45-50	35 min.	0.05	0.1	0.01	140	0.50	440 max.	.....	800 max.	850 max.	30-34	0	From Maine to Florida.
Atlantic Refining Co. <sup>1</sup> Furnace Oil Medium.....	45 avg.	33-40	0.05	0.10 <sup>6</sup>	0.01	130-160	0.625	440 max.	510 avg.	600 max.	640 max.	32 min.	0	
Special Diesel Fuel.....	48 avg.	33 avg.	0.03	0.05 avg. <sup>6</sup>	0.01	140 avg.	0.3 avg.	410 avg.	480 avg.	560 avg.	620	37 avg.	0	N. Y., Pa., Md., N. C., Ga., Fla.
Diesel Fuel.....	50 min.	34-40	Trace	0.15 <sup>6</sup>	0.01	150	0.50	470 max.	530 max.	640 max.	690	32 min.	0	
Cities Service Oil Co. Diesel Fuel No. 12.....	55.0	1.8-3.0 <sup>8</sup>	0.05	0.15	0.01	150	0.25	.....	.....	550	590	.....	-25	
Diesel Fuel No. 23.....	50.0	35-45	.....	0.20	0.01	150	1.00	.....	.....	650 <sup>4</sup>	700 <sup>5</sup>	.....	0	
Continental Oil Co. Conoco Diesel Fuel.....	50 min.	34-35	Trace	.05-.15 <sup>6</sup>	Trace	150	.15-.20	435-470	488-520	530-580	610-640	37-38	-5-0	Okl., Kan., Neb., Iowa, Ill., Ind., Me., Minn., Cal., Tex., Ark., Wyo.
Conoco Diesel Fuel.....	50 min.	35	Trace	.05-10 <sup>6</sup>	Trace	200-215	.15-.20	488-498	524-528	540-600	620-625	38-39	0-15	Texas, La.
Conoco Diesel Fuel.....	49 min.	34	.05	.05 <sup>6</sup>	Trace	150	.5	468	517	575	610	38-38	0	New Mexico, Texas.
Conoco Diesel Fuel "B".....	48 min.	33	Trace	.05 <sup>6</sup>	Trace	130	.1	367-394	.....	.....	525	43-45	-15	Okl., Kan., Neb., Iowa, Ill., Ind., Me., Minn., Col., Tex., Ark.
Eso Standard Oil Co. <sup>7</sup> Eso Std. Oil Co. of Pa. <sup>7</sup>	52	32	Nil	Nil	Nil	125	0.08	385	448	515	544	42.0	-35	
Eso Diesel Fuel 160.....	54.0	35.3	Nil	0.02	Nil	150	0.25	440	508	590	642	37.5	0	New England, N. Y., S. C., N. C., Va., W. Va., Tenn., La., Ark., Md., Del., D. C., N. J., Pa.
Eso Diesel Fuel 209.....	47.5	37.5	Nil	0.03	Nil	150	0.60	460	540	620	660	34.8	10	
Eso Diesel Fuel 210.....	50	35	Nil	Nil	Nil	125	0.10	395	440	500	560	42-48	-25	All states east of Mississippi River plus Tex., Ark. and La.
Gulf Oil Corp. Gulf No. 1 Diesel Fuel.....	50-60	30-32	Nil	0.05	Nil	125	0.10	395	440	500	560	42-48	-25	
Gulf Dielect Fuel.....	50 min.	34-45	Trace	0.15	0.01	150	0.50	455	.....	600	650	36-42	0	
Phillips Petroleum Co. Phillips Diesel Regular.....	50	35-50	Trace	.10 <sup>6</sup>	0	150	0.50	460 max.	525	600 max.	650 max.	38-40	0	Colo., N. M., Western Texas, Texas Gulf.
Phillips Diesel Regular.....	50	35-40	Trace	.10 <sup>6</sup>	0	150	0.30	460 max.	540	630 max.	675 max.	35-40	0-10	Ark., Kan., Ill., Iowa, Minn., Mo., Neb., Okla.
Phillips Diesel Special.....	50	33-40	Trace	.10 <sup>6</sup>	0	140	0.25	440 max.	520	600 max.	650 max.	39-41	0	Kan., Ill., Iowa, Minn., Mo., Neb.
Phillips Diesel Light.....	50	30-32	Trace	.05 <sup>6</sup>	0	120	0.15	410 max.	460	500	525 max.	42-44	-20	Ark., Kan., Ill., Iowa, Minn., Mo., Neb., Okla.
Pure Oil Co. Energee Diesel Fuel #1.....	50 min.	31 min.	0.01	0.05 <sup>6</sup>	0.01	125	0.25	410 max.	450 max.	510 max.	560 max.	41 min.	0	East of Mississippi River (excluding New England and N. Y.), Minn., Iowa, Ark., Texas and the Dakotas.
Energee Diesel Fuel #2.....	50 min.	34 min.	0.01	0.20 <sup>6</sup>	0.01	150	0.25	440 max.	500 max.	600 max.	660 max.	34 min.	0	
Richfield Oil Corp. Richfield Diesel Fuel.....	42	38	Trace	0.08	Nil	170	0.60	471	540	615	660	32.0	0	Cal., Ore., Wash., Nev., Ariz., Idaho.
Richfield Rocket.....	48	36	Nil	0.05	Nil	200	0.20	480	520	570	605	34.8	0	Cal., Nev., Ariz.
Shell Oil Co. (N. Y.) Dieseline.....	45	33-40	0.05	0.30	0.01	150	1.0	480	.....	650	700 max.	40 min.	0	Ark., Iowa, La., Minn., Mo., Texas, East of Mississippi.
Shell Oil Co. (N. Y.) Premium Dieseline.....	45	1.4-2.2 <sup>8</sup>	Nil	0.15	0.01	120	0.15	410	.....	650	560 max.	40 min.	0	
Shell Oil Co. (San. Fran.) Dieseline.....	40	35-45	0.05	0.25 <sup>6</sup>	0.01	150	1.0	425-485	550 max.	600-675	725 max.	29 min.	15	Cal., Ore., Wash., Nev., Ariz., Idaho.
Shell Oil Co. (San. Fran.) Premium Dieseline.....	50	30-36	.....	0.15 <sup>6</sup>	0.01	125	0.50	.....	550 max.	590 max.	.....	0		
Sinclair Refining Co. 155 Diesel Fuel.....	49	35	None	0.05	.....	140	0.44	422	501	562	664	35.2	0	All states listed below.
250 Diesel Fuel.....	52.6	35	None	0.35	.....	168	0.16	428	501	596	660	39.0	0	N. Y., N. J., Del., Pa., Md., D. C., Va., W. Va., Ala., Fla., Ga., Miss., N. C., S. C., Tenn., Tex.
346 Diesel Fuel.....	52.6	35	None	0.35	.....	168	0.16	428	501	596	660	39.0	0	Ind., Ill., Mich., Ohio, Wisc.
347 Diesel Fuel.....	52.6	35	None	0.35	.....	168	0.16	428	501	596	660	39.0	0	Utah, Colo., Wyo., Iowa, Kan., Minn., Mo., Neb., N. D., S. D.
355 Diesel Fuel.....	53.4	35	None	0.20	0.01	172	0.19	431	504	596	656	38.8	0	Ind., Ill., Mich., Ohio, Wis., Utah, Colo., Wyo., Idaho, Iowa, Kan., Minn., Miss., Neb., N. D., S. D., Okla.
Soco-Vacuum Oil Co. Mobilfuel Diesel.....	45-50	31 min.	Trace	.....	0.01	150	0.5	440	.....	600	675	.....	0	Wherever demand exists.
Mobilfuel Diesel Special.....	45-50	31 min.	Trace	.....	Trace	125	0.5	410	.....	500	560	.....	-20	
Standard Oil Co. of Cal. <sup>7</sup> Standard Diesel.....	42.5-50	35.4- 38.2	0.0	0.0-0.07 <sup>6</sup>	0.0	160-192	0.21-0.73	431-482	506-546	566-625	624-718	31.5-34.9	0-10	Cal., Ore., Wash., Idaho, Nev., Ariz., Utah, Hawaii, Alaska.
Std. Automotive Diesel.....	50-50.5	1.8-1.9 <sup>8</sup>	0.0	0.01 <sup>6</sup>	0.0	148-152	0.03-0.11	392-398	442-450	516-523	580-589	39.3-42.9	-30-40	
Standard Oil Co. of Ind. <sup>7</sup> Stanolind.....	55	35	Trace	0.05	Trace	160	0.29	480	530	586	624	38	0	Mich., Ind., Ill., Minn., Iowa, Mo., Neb., N. D., S. D., Kan., Mont., N. Y., Colo., Wisc.
Stanolind.....	45	33	Trace	0.10	Trace	150	0.45	400	475	565	625	37.1	-10	
Standard.....	50	32	Trace	0.02	Trace	150	0.27	395	440	500	560	41.5	-20	
Sun Oil Co. Diesel Fuel Light.....	50	34-36	None	0.15	Nil	125	0.20	440	520	620	650	36-40	+5	Phila., Newark, Harrisburg, Pittsburgh, Boston, Wilmington, Baltimore.
The Texas Co. Diesel Chief-L <sup>9</sup> .....	40 min.	1.4 min <sup>8</sup>	Trace	0.15	0.01	100	0.50	.....	.....	625 max.	.....	20	Wherever demand exists.	
Diesel Chief <sup>10</sup> .....	40	45 max.	0.10	0.35	0.02	100	1.0	.....	675 max.	.....	20			
Union Oil Co. of Cal. Diesel.....	42	38-40	Trace	0.05	Trace	150	1.0	475	540	640	700	33	20	Ariz., Idaho, Nev., Cal., Ore., Wash.

<sup>1</sup>—Figures marked (avg) average, are not guaranteed.<sup>2</sup>—Meets GM specs for Series 71 engine fuels, available only on request.<sup>3</sup>—Meets Navy Bureau of Ships spec.—"Oil, fuel diesel, 7-0-2e".<sup>4</sup>—Will be 675 F in Mid-Continent States.<sup>5</sup>—Does not apply to fuel in Mid-Continent States.<sup>6</sup>—Based upon "10 per cent bottoms" test.<sup>7</sup>—These data are typical inspections and are not guaranteed.<sup>8</sup>—Viscosity given in centistokes.<sup>9</sup>—Complies with ASTM 1-D spec.<sup>10</sup>—Complies with ASTM 2-D spec.

# Specifications for

# THIRD AXLES

and

## TRAILER SUSPENSIONS

### NOTES ON HEADINGS

**Column 2.** The capacity of the third axle is not to be confused with the total capacity made possible on the converted vehicle.

**Column 3.** The price of the unit includes the standard brakes specified in brake columns and frame extensions that extend forward under the cab. Tires and brake (air or vacuum) power are not included in price nor is the cost of installation.

**Column 4.** Weight of third axle unit includes all appurtenances and maximum tires.

**Column 15** gives brake lining area of attachment point.

### ABBREVIATIONS

COLUMN 9	COLUMN 12
Chev—Chevrolet	A—Air
Shu—Shuler	B—Bendix
Tim—Timken	C—Chevrolet
Wag—Wagner Hi-Tork	F—Ford
	H—Hydraulic
	L—Lockheed
D—Driving	M—Mechanical
Re—Rectangular	O—Own
SF—Standard Forge	V—Vacuum Power
Sr—Solid round	W—Westinghouse
Sq—Square	
T—Tubular	

### COLUMN 10

	Own—square
	Timken—round
	Shuler—round
	Fruhauf—I-Beam
	Std. Forge—round
	(e)—Depends upon manufacturer.
	(f)—Optional equipment.
	(g)—Round, square or I-sectional axles can be used.

### COLUMN 13—CA—Cast Alloy Iron

++—On application.

\*\*—Equipped with gravity spring suspension.

(w)—New pusher-type axle recently introduced by Detroit Automotive Products Corp.

(x)—Patented 4-wheel chain drive available for all Truxtor units.

(y)—All Truxmore units equipped with radius rods on driving axle and load distribution may be adjusted within limits shown in cols. 6 & 7.

(z)—Depends upon installation.

Note 1. Two-axle self-steering undercarriage uses any standard trailer axle.

\*—Chains and sprockets available—optional at extra charge.

(a)—Long slip-spline joint supplied for drive axle in place of radius rods.

(c) (d)—

Own—square

Timken—round

Shuler—round

Fruhauf—I-Beam

Std. Forge—round

(e)—Depends upon manufacturer.

(f)—Optional equipment.

(g)—Round, square or I-sectional axles can be used.

THIRD AXLE MAKE AND MODEL and Truck Model Adapted to	Capacity (l.b.) See Explanatory Notes	LOAD DIS- TRIBUTION RANGE										AXLE DATA				BRAKES (Standard)				Number of Points of Frame Support	Spring Size or Number Leaves Added	Spindle Diameter (at inner bearing)
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
<b>Trailing Axles</b>																						
FABCO																						
220 (Ford)	11000	775	2000	8.25/20	52-48		44	Tim	T	41 <sup>1</sup> / <sub>2</sub>	LH	CA	15x3 <sup>1</sup> / <sub>2</sub>	192	2	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>					
2 0 (Chevrolet)	11000	775	2000	8.25/20	52-48		44	Tim	T	41 <sup>1</sup> / <sub>2</sub>	LH	CA	15x3 <sup>1</sup> / <sub>2</sub>	192	2	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>					
220 (All other makes)	11000	775	2000	8.25/20	52-48		44	Tim	T	41 <sup>1</sup> / <sub>2</sub>	LH	CA	16x3 <sup>1</sup> / <sub>2</sub>	205	2	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>					
330 (All other makes)	13000	975	3000	10.00/20	52-48		48	Tim	T	41 <sup>1</sup> / <sub>2</sub>	LH	CA	16x3 <sup>1</sup> / <sub>2</sub>	205	2	48x3	2 <sup>1</sup> / <sub>8</sub>					
325 (Ford F-7)	13000	1173	3000	9.00/20	52-48		44	Tim	SF	41 <sup>1</sup> / <sub>2</sub>	M	CA	16 <sup>1</sup> / <sub>2</sub> x5	325	2	48x3	3					
330 (Ford F-8)	13000	1173	3000	10.00/20	52-48		48	Tim	SF	41 <sup>1</sup> / <sub>2</sub>	M	CA	16 <sup>1</sup> / <sub>2</sub> x5	325	2	48x3	3					
400 (All other makes)	18000	1565	3200	11.00/20	55-45		52	Tim	T	5	M	CA	16 <sup>1</sup> / <sub>2</sub> x7	435	2	55x4	3 <sup>1</sup> / <sub>4</sub>					
FRAZIER																						
10E Tandem	9000	++	1000	9.00/20	54-46		42	Tim	T	41 <sup>1</sup> / <sub>2</sub>	Tim	CA	16 <sup>1</sup> / <sub>2</sub> x4	290	6	None	2 <sup>1</sup> / <sub>2</sub>					
12E Tandem	18000	1450	10.00/20	54-46			44	Tim	T	41 <sup>1</sup> / <sub>2</sub>	Tim	CA	16 <sup>1</sup> / <sub>2</sub> x6	362	6	None	2 <sup>1</sup> / <sub>8</sub>					
14E Tandem	18000	++	2600	11.00/22	54-46		48	Tim	T	5	Tim	CA	16 <sup>1</sup> / <sub>2</sub> x6	434	6	None	3 <sup>1</sup> / <sub>4</sub>					
GRCO SUPER-FLEX																						
T-1300	10 ton	++	2360	9.00	50-50		48	Shu	T	41 <sup>1</sup> / <sub>2</sub>	H	CA	16x5	340	2	4, 13	2					
T-1400	12 ton	++	2640	10.00	50-50		48	Shu	T	41 <sup>1</sup> / <sub>2</sub>	H	CA	16x6	410	2	2, 13	2					
T-1410	12 ton	++	2640	10.00	50-50		48	Shu	T	41 <sup>1</sup> / <sub>2</sub>	A	CA	16 <sup>1</sup> / <sub>2</sub> x6	434	2							
T-1420	12 ton	++	2640	10.00	50-50		48	Shu	T	41 <sup>1</sup> / <sub>2</sub>	A	CA	16 <sup>1</sup> / <sub>2</sub> x7	444	2	2, 18						
T-1600	15 ton	++	2815	11.00	50-50		48	Shu	T	5	A-V	CA	16 <sup>1</sup> / <sub>2</sub> x7	444	2	4, 13	2					
T-1610	15 ton	++	2815	11.00	50-50		48	Shu	T	5	A-V	CA	16 <sup>1</sup> / <sub>2</sub> x8	512	2	4, 18						
LITTLE GIANT																						
A	11000		1920	8.25/20	53-47	4 <sup>7</sup>	42	Own(g)	Sq	2 <sup>3</sup> / <sub>4</sub>	Wag	CA	15x4	253.5	2	42x2 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>					
B	13000		2450	9.00/20	50-50	44	Own(g)	Sq	3	Wag	CA	16x4	270.7	2	44x3	2 <sup>1</sup> / <sub>2</sub>						
C	15000		2850	10.00/20	50-50	44	Own(g)	Sq	3 <sup>1</sup> / <sub>4</sub>	Wag	CA	16x5	338	2	44x3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>						
D	18000		3050	11.00/20	50-50	49	Own(g)	Sq	3 <sup>1</sup> / <sub>2</sub>	Wag	CA	16x6	406	2	49x3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>4</sub>						
LOAD BOOSTER "Duaload"																						
LB28C Chev. 1 <sup>1</sup> / <sub>2</sub> & 2 ton	14000	2100	9.00/20	50-50		48	Own	T	41 <sup>1</sup> / <sub>2</sub>	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>						
LB28F Ford F5 & F6	14000	2100	9.00/20	50-50		48	Own	T	41 <sup>1</sup> / <sub>2</sub>	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>						
LB38F Ford F7 & F8	16000	2600	10.00/20	50-50		48	Own	T	5	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>4</sub>						
LB28D Dodge 1 <sup>1</sup> / <sub>2</sub> & 2 Ton	14000	2100	9.00/20	50-50		48	Own	T	41 <sup>1</sup> / <sub>2</sub>	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>						
LB38D Dodge 2 <sup>1</sup> / <sub>2</sub> & 3 ton	16000	2600	10.00/20	50-50		48	Own	T	5	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>4</sub>						
LB28V Various 2 <sup>1</sup> / <sub>2</sub> & 3 ton	14000	2100	9.00/20	50-50		48	Own	T	41 <sup>1</sup> / <sub>2</sub>	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>						
LB38V Various 2 <sup>1</sup> / <sub>2</sub> & 3 ton	16000	2600	10.00/20	50-50		48	Own	T	5	VH	CA	16x4	372	4	48x2 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>4</sub>						
SIX WHEELS, INC. "MAXI" (*)																						
GF-1 (All Makes)	13000	(z)	1700	7.50/20	55-45		45	Var	T	41 <sup>1</sup> / <sub>2</sub>	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GF-2 (All Makes)	13000	(z)	1750	8.25/20	55-45		45	Var	T	41 <sup>1</sup> / <sub>2</sub>	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GF-3 (All Makes)	13000	(z)	1800	9.00/20	55-45		45	Var	T	41 <sup>1</sup> / <sub>2</sub>	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GFS-1 (All Makes)	15000	(z)	1850	9.00/20	55-45		45	Var	T	41 <sup>1</sup> / <sub>2</sub>	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GFS-2 (All Makes)	15000	(z)	1850	9.00/20	55-45		45	Var	T	41 <sup>1</sup> / <sub>2</sub>	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GFS-3 (All Makes)	15000	(z)	1850	10.00/20	55-45		45	Var	T	41 <sup>1</sup> / <sub>2</sub>	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GH-1 (All Makes)	16000	(z)	2000	10.00/20	55-45		45	Var	T	5	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GH-2 (All Makes)	16000	(z)	2000	10.00/22	55-45	52-48	45	Var	T	5	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GH-3 (All Makes)	16000	(z)	2000	11.00/20	55-45	52-48	45	Var	T	5	Var	Var	Var	Var	Var	2	45x3 <sup>1</sup> / <sub>2</sub>	Var				
GHS-1 (All Makes)	18000	(z)	2250	10.00/22	52-48		48	Var	T	5	Var	Var	Var	Var	Var	2	48x3 <sup>1</sup> / <sub>2</sub>	Var				
GHS-2 (All Makes)	18000	(z)	2250	11.00/20	52-48		48	Var	T	5	Var	Var	Var	Var	Var	2	48x3 <sup>1</sup> / <sub>2</sub>	Var				
GHS-3 (All Makes)	18000	(z)	2250	11.00/22	52-48		48	Var	T	5	Var	Var	Var	Var	Var	2	48x3 <sup>1</sup> / <sub>2</sub>	Var				
GHS-4 (All Makes)	18000	(z)	2250	11.00/24	52-48		48	Var	T	5	Var	Var	Var	Var	Var	2	48x3 <sup>1</sup> / <sub>2</sub>	Var				
TRAILMOBILE																						
CTA-22 (All trucks to 2-ton)	11000	++	1626	8.25/20	58-42		46	Tim	T	41 <sup>1</sup> / <sub>2</sub>	Tim	CA	16 <sup>1</sup> / <sub>2</sub> x4	290	4	None</td						

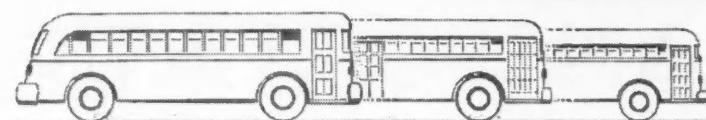
## SELECTION & OPERATION

THIRD AXLE MAKE AND MODEL and Truck Model Adapted to		Capacity (Lb.) See Explanatory Notes	Price (f. o. b. factory)	Weight (Lb.) with Max Tires, Frame Extension, Etc.	Maximum Tire Size	LOAD DISTRIBUTION RANGE		Axle Spacing (in inches) (with maximum tires)	AXLE DATA			BRAKES (Standard)			Number of Points of Frame Support	Spring Size or Number Leaves Added	Spindle Diameter (at inner bearing)	
1	2					5	6	7	8	9	10	11	12	13	14	15		
<b>TRAILING AXLES—cont'</b>																		
1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16	17	18
TRUCKTOR (x)—cont.																		
HLR (Heavy truck, tires to 10.00x20)	16000	1850	2710	10.00/20	53-47	.....	48	Own	Sr	3½	WAM	CA	16½x6	251	6	40x3	2½	
HLR (Ford F-8, tires to 10.00x20)	16000	1080	2710	10.00/20	53-47	.....	48	Own	Sr	3½	LHV	CA	16×5	335	6	40x3	2½	
HR (Heavy-duty, tires to 12.00x20)	21000	2020	3177	11.00/24	53-47	.....	52	Own	Sr	4	WAM	CA	16½x6	251	6	41½x3	3½	
HR-5 (Extra heavy-duty)	30000	++	3358	12.00/24	53-47	.....	53½	Own	Sr	5½	WAM	CA	17½x5½	380	6	43½x4	3½	
TRUXMORE (y)																		
280 Series	12000	++	2700	8.25/20	53-47	62-38	44½-48	Own	Sq	2½	H	CA	16x3½	200	4	**	2½	
340 (Standard)	14000	3100	9.00/20	52-48	60-40	47-48	Own	Sq	3	H	CA	16x3½	210	4	**	2½		
340HT (Hi-tork brake)	14000	3200	9.00/20	52-48	60-40	47-48	Own	Sq	3	H	CA	16x5x½	340	4	**	2½		
340A (Air brake)	14000	3300	9.00/20	52-48	60-40	47-48	Own	Sq	3	MW	CA	16½x4x½	305	4	**	2½		
400 (Hi-tork Hyd. brake)	16000	3600	10.00/20	51-49	60-40	47-48	Own	Sq	3½	H	CA	16x5x½	340	4	**	3½		
400 (Opt. size brake)	16000	3650	10.00/20	51-49	60-40	47-48	Own	Sq	3½	H	CA	16x6x½	410	4	**	3½		
400A (Air brake)	16000	3700	10.00/20	51-49	60-40	47-48	Own	Sq	3½	MW	CA	16½x5x½	380	4	**	3½		
450 (Hi-tork Hyd. brake)	18000	3900	11.00/20	51-49	60-40	49-50	Own	Sq	3½-3½	H	CA	16x6x½	410	4	**	3½		
450A (Air brake)	18000	3950	11.00/20	51-49	60-40	49-50	Own	Sq	3½-3½	MW	CA	16½x6x½	455	4	**	3½		
50H (Hyd. brake)	20000	4200	11.00/24	50-50	65-35	49-53	Own	Sq	3½	H	CA	17½x4x½	360	4	**	3½		
50A (Air brake)	20000	4300	11.00/24	50-50	65-35	49-53	Own	Sq	3½	MW	CA	17½x5x½	410	4	**	3½		
UTILITY																		
25 (For any ½-ton truck)	9000	1037	1330	8.25/20	55-45	.....	41	Own	Sq	2½	BHT	CA	16x3½	230	4	None	2½	
30 (For any ¾-ton truck)	13000	1465	1880	10.00/20	55-45	68/33	44	Own	Sq	3	BHT	CA	17x4	270	4	None	2½	
35 (For any 5-ton truck)	18000	1758	2285	11.00/24	55-45	68/33	50	Own	Sq	3½	OMV†	CA	16x5	300	4	None	3	
<b>Driving Axles</b>																		
FABCO																		
520 Ford	10500	1400	2400	8.25/20	50-50	.....	44	Tim	D	.....	FH	CA	15x3½	192	2	48x2½	2½	
520 (Chevrolet with H. D. Axles)	10500	1475	2400	8.25/20	50-50	.....	44	Chev	1S	D	CH	CA	16x3	176	2	48x2½	2½	
520 (All other makes)	10500	(z)	2400	8.25/20	50-50	.....	44	Match	D	.....	LH	CA	Match (z)	2	48x2½	z		
630 (All other makes)	13000	(z)	3000	10.00/20	50-50	.....	48	Match	D	.....	LH	CA	Match (z)	2	53x3	z		
625 (Ford F-7)	14000	(z)	3200	10.00/20	50-50	.....	44	Ford	D	.....	FH	CA	15x5	444	2	48x3	3	
630 (Ford F-8)	16000	(z)	3600	10.00/20	50-50	.....	48	Ford	D	.....	FH	CA	16x5	533	2	53x3	3	
800 (H. D. Trucks)	20000	(z)	4000	11.00/20	50-50	.....	52	Match	D	.....	FH	CA	16x5	564	2	56x4	z	
THORNTON DRIVE																		
A3C28 Chev. 1½ ton	11250		3200	8.25/20	50-50	.....	48	Chev	1S	D	3½	VH	CA	18x3	218	4	48x2½	2½
A4C29 Chev. 2 ton	12500		3300	8.25/20	50-50	.....	48	Chev	1S	D	4	VH	CA	18x3	218	4	48x2½	2½
A2C29 Chev. 2 ton	12750		3300	8.25/20	50-50	.....	48	Chev	2S	D	4½	VH	CA	15x3½	198	4	48x2½	2½
A9D29 Dodge FA, KA, JA	12750		3300	8.25/20	50-50	.....	48	Dodge	2S	D	4½	VH	CA	15x3½	198	4	48x2½	2½
A6D34 Dodge KA, KMA	14250		3600	9.00/20	50-50	.....	52½	Dodge	2S	D	4½	VH	CA	16½x3½	207	4	52½x2½	3
A1F26 Ford F5	11250		3200	8.25/20	50-50	.....	48	Ford	1S	D	3½	VH	CA	15x3½	198	4	48x2½	2½
A2F29 Ford F6	12750		3300	8.25/20	50-50	.....	48	Ford	2S	D	4½	VH	CA	15x3½	198	4	48x2½	2½
A2F31 Ford F7	12750		3400	9.00/20	50-50	.....	48	Ford	2S	D	4½	VH	CA	15x3½	198	4	48x2½	2½
A14F38 Ford F8	16500		3800	10.00/20	50-50	.....	52½	Ford	2S	D	5½	VH	CA	16x5	350	4	52½x2½	3½
A15F38 Ford F8	16500		3700	10.00/20	50-50	.....	52½	Ford	1S	D	5½	VH	CA	16x5	350	4	52½x2½	3½
A6G34 GMC 450 Series	14250		3600	9.00/20	50-50	.....	52½	GMC	2S	D	4½	VH	CA	16½x3½	207	4	52½x2½	3
A2 Various	12750		3300	8.25/20	50-50	.....	48	Eaton	D	5½	VH	CA	15x3½	198	4	48x2½	2½	
A6 Various	14250		3000	9.00/20	50-50	.....	52½	Eaton	D	4½	VH	CA	16½x3½	207	4	52½x2½	3	
<b>Trailer Suspensions</b>																		
FRAZIER																		
10E Tandem	30000	++	.....	12.00/22	50-50	.....	50	Tim	T	5	Tim	CA	16½x6	434	6	42x3	.....	
12E Tandem	36000	++	.....	12.00/22	50-50	.....	50	Tim	T	5	Tim	CA	16½x7	435	6	42x3	.....	
14E Tandem	48000	++	.....	12.00/22	50-50	.....	53	Tim	T	SR	Tim	CA	16½x7	435	6	42x3	.....	
HOOBLER (Note 1)	48000	++	6300	11.00/22	50-50	.....	108½	Note 1	Note 1	Var	Var	Var	Var	Var	Var	2	42x4	Var
LITTLE GIANT (Tandem conversions for single axle trailers)	15000	++	.....	7.00/20	50-50	.....	42	Shu	Sq	2½	AH	CA	15x3½	.....	2	25½	.....	
20000	++	.....	7.00/20	50-50	.....	44	Shu	Sq	3	AH	CA	16x3½	.....	2	3	.....		
25000	++	.....	7.00/20	50-50	.....	44	Shu	Sq	3½	AH	CA	16x5	.....	2	3½	.....		
36000	++	.....	11.00/20	50-50	.....	50	(c)	(d)	(e)	CA	16½x6	.....	6	3½	.....	3½		
NEWAY (Tandem)																		
330	30000		.....	11.00/20	50-50	.....	48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
334	34000		.....	11.00/20	50-50	.....	48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
336	36000		.....	11.00/20	50-50	.....	48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
344	34000		.....	11.00/20	50-50	.....	48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
402	44000		.....	11.00/20	50-50	.....	48	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
828	28000		.....	11.00/22	50-50	.....	50½	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
832	32000		.....	11.00/22	50-50	.....	50½	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
836	36000		.....	11.00/22	50-50	.....	50½	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
842	42000		.....	11.00/22	50-50	.....	50½	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
942	42000		.....	11.00/22	50-50	.....	50½	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
946	46000		.....	12.00/20	50-50	.....	50½	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
1502	40000		.....	11.00/24	50-50	.....	53	Var	Var	Var	Var	Var	Var	Var	2	Var	Var	
TRUCKTOR																		
T-11 (Single)	11000	550	2000	8.25/20	53-47	62-38	44½-48	Own	Sq	2½	H	CA	15x3½	236	4	56	.....	
T-14 (Single)	14000	580	2300	9.00/20	52-48	60-40	47-48	Own	Sq	3	H	CA	17½x4	251	4	56	.....	
T-16 (Single)	16000	830	2600	10.00/20	52-48</td													

# BUS SPECIFICATIONS

Line Number	Bus Make and Model	General							Engine							Oiling System				
		Passenger Rating	Type (City Service, Parlor, etc.)	Standard Wheelbase (In.)	Overall Length (In.)—Bumper to Bumper	Inside Passenger Compartment	Tread (In.)—Front and Rear	Complete Vehicle Weight—Dry (Lb.)	Standard Tire Size (In.)—Front and Rear	Make and Model	Cycle and Fuel	Location	Number of Cylinders—Bore and Stroke (In.)	Displacement (Cu. In.)	Rated Horsepower (A.M.A.)	Maximum Brake Hp. at Governed R.P.M.	Maximum Net Torque (Lb. Ft.) at Specified R.P.M.	Compression Ratio—1 to 1	Compression Pressure—(Lb. per Sq. In.) at Specified R.P.M.	Valve Arrangement
1 ACF-Brill..	IC-41	37-41	IC	270	419 <sup>1</sup> / <sub>2</sub>	408	80 <sup>1</sup> / <sub>2</sub> -71	20600	11.00/22	HS... 190-2 4-G UF	6-5 <sup>1</sup> / <sub>2</sub> x6	779	68.2	220-2200	625-1300	5.60	.....	.....	.....	acdfg
2 C-27	27	CS	163	311	296	82 <sup>1</sup> / <sub>2</sub> -74	10600	8.25/20	Int. RED 361 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x5	361	40.8	18-2800	282-1200	6.30	.....	.....	.....	abcfq	
3 C-31	31	CS	196	344	329	81 <sup>1</sup> / <sub>2</sub> -74	11300	9.00/20	Int. RED 401 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x5	401	40.8	140-2800	315-1200	6.30	.....	.....	.....	abcfq	
4 C-36	36	CS	198 <sup>1</sup> / <sub>2</sub>	369 <sup>1</sup> / <sub>2</sub>	356	79 <sup>1</sup> / <sub>2</sub> -71	14800	10.00/20	HS... 477-2 4-G UF	6-4 <sup>1</sup> / <sub>2</sub> x5	477	48.6	160-2400	370-1600	6.00	.....	.....	.....	acdfg	
5 C-44	44	CS	249	420	407	80 <sup>1</sup> / <sub>2</sub> -71	17500	11.00/20	HS... 180-1 4-G UF	6-5 <sup>1</sup> /x6	707	60.0	208-2200	540-1200	6.00	.....	.....	.....	acdfg	
6 C-44	45	Sub	249	420	407	80 <sup>1</sup> / <sub>2</sub> -71	18900	11.00/20	HS... 190-2 4-G UF	6-5 <sup>1</sup> /x6	779	68.2	220-2200	625-1300	5.60	.....	.....	.....	acdfg	
7 C-48	48	CS	247	474	462	88 <sup>1</sup> / <sub>2</sub> -74 <sup>1</sup> / <sub>2</sub>	19200	12.00/20	HS... 190-2 4-G UF	6-5 <sup>1</sup> /x6	779	68.2	220-2200	625-1300	5.60	.....	.....	.....	acdfg	
8 Aerocoach.	P-37	IC	229	407	389	80 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	17000	10.00/20	Cont. 60501 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	501	48.6	170-2400	380-1200	5.90	.....	.....	.....	acdfg	
9 P-411	41	IC	261	420	405 <sup>1</sup> / <sub>2</sub>	79 <sup>1</sup> / <sub>2</sub> -71	20000	11.00/20	Cont. 56749 4-G TR	6-5 <sup>1</sup> /x5	749	69.3	240-2500	575-1400	5.73	.....	.....	.....	abcf	
10 T-361	36	CS	210 <sup>1</sup> / <sub>2</sub>	367	352	80 <sup>1</sup> / <sub>2</sub> -71 <sup>1</sup> / <sub>2</sub>	16000	10.00/20	Cont. U6501 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	501	48.6	170-2500	385-1500	.....	.....	.....	abcf		
11 T-451	45	CS	263 <sup>1</sup> / <sub>2</sub>	420	405	80 <sup>1</sup> / <sub>2</sub> -71	17000	11.00/20	Cont. R6572 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	572	54.0	205-2500	485-1400	6.75	.....	.....	.....	abcf	
12 Beaver	27PT	CS	154	321 <sup>1</sup> / <sub>2</sub>	156	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	11500	8.25/20	Int. BLD269 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	269	35.0	101-3000	220-1000	6.30	114-160	abc	.....	Zen	
13 B-31PT	33	CS	164	331	169	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	12800	9.00/20	Int. RD361 4-G R	6-4 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	361	44.0	12-2800	282-1200	6.30	110-160	abc	.....	Zen	
14 B-35PT	37	CS	195 <sup>1</sup> / <sub>2</sub>	354	192	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	13500	9.00/20	Int. RD450 4-G R	6-4 <sup>1</sup> / <sub>2</sub> x5	451	52.0	148-2600	362-1000	6.30	122-160	abcf	.....	Zen	
15 Beck.	Steiner	24	IC	190	322	262	76-68	8.25/20	Int. BLD269 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	269	30.4	100-3000	220-1000	6.13	.....	.....	.....	acdfg	
16 Mainliner Series II	33	CS	220	396	323	81 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	10.00/20	Int. RE450 4-G R	6-4 <sup>1</sup> / <sub>2</sub> x5	450	45.9	140-2400	350-1000	6.30	.....	.....	.....	abcf		
17 Luxury Liner	I-C.	37	IC	220	420	350	80 <sup>1</sup> / <sub>2</sub> -71	11.00/20	Cum.HR6800 4-D R	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	588	55.6	200-2600	475-1000	6.00	120-150	abed	.....	Zen	
18 Cub.	16-S	IC	160	271	197	61 <sup>1</sup> / <sub>2</sub> -60 <sup>1</sup> / <sub>2</sub>	5960	7.50/17	Ford... 9H-J 4-G FR	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	226	24.4	95-3300	180-1200	6.80	110-80	ac	.....	Hol	
19 19-T	19	CS	160	271	197	61 <sup>1</sup> / <sub>2</sub> -60 <sup>1</sup> / <sub>2</sub>	5960	7.50/17	Ford... 9H-J 4-G FR	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	226	24.4	95-3300	180-1200	6.80	110-80	ac	.....	Hol	
20 Fitzjohn.	Cityliner	33	165 <sup>1</sup> / <sub>2</sub>	334	320	82 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	12000	10.00/20	Her... JXL 4-G FR	6-4 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	338	38.4	131-3000	272-1400	7.00	.....	.....	.....	abcf	
21 Flexible.	Duraliner	28	IC	185 <sup>1</sup> / <sub>2</sub>	321 <sup>1</sup> / <sub>2</sub>	286	77 <sup>1</sup> / <sub>2</sub> -65 <sup>1</sup> / <sub>2</sub>	12000	9.00/20	Her... JXL 4-G FR	6-4 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	339	38.4	131-3000	272-1400	7.00	.....	.....	.....	abcf
22 C-75C	37	IC	231	418 <sup>1</sup> / <sub>2</sub>	356	80 <sup>1</sup> / <sub>2</sub> -71	17250	10.00/20	Che.LM-235 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	470	60.8	186-3400	384-111	6.62	.....	.....	.....	adf	
23 C-75B	50	IC	182	359 <sup>1</sup> / <sub>2</sub>	252	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	12800	9.00/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
24 C-75C	50	IC	182	359 <sup>1</sup> / <sub>2</sub>	252	78-69 <sup>1</sup> / <sub>2</sub>	11330	8.25/20	Che.LM-235 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	235	30.4	93-3400	192-111	6.62	.....	.....	.....	acdf	
25 C-75D	50	IC	218	395 <sup>1</sup> / <sub>2</sub>	288	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	13450	9.00/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
26 C-75E	50	IC	218	395 <sup>1</sup> / <sub>2</sub>	288	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	13390	9.00/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
27 C-75F	50	IC	218	395 <sup>1</sup> / <sub>2</sub>	288	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	13450	9.00/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
28 C-75G	50	IC	218	395 <sup>1</sup> / <sub>2</sub>	288	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	13450	9.00/20	Che.LM-235 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	235	30.4	93-3400	192-111	6.62	.....	.....	.....	acdf	
29 C-75H	50	IC	146	321 <sup>1</sup> / <sub>2</sub>	216	78-69 <sup>1</sup> / <sub>2</sub>	10600	8.25/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
30 C-75I	50	IC	212	395 <sup>1</sup> / <sub>2</sub>	288	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	13265	9.00/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
31 21B1 & 29B5	50	IC	146	323 <sup>1</sup> / <sub>2</sub>	252	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	11140	9.00/20	Bul... FB320 4-G R	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	320	37.8	144-3400	278-2200	6.70	.....	.....	.....	acdf	
32 29HD-1	50	IC	218	395 <sup>1</sup> / <sub>2</sub>	288	80 <sup>1</sup> / <sub>2</sub> -69 <sup>1</sup> / <sub>2</sub>	15100	9.00/20	Her... DWXL 4-D R	6-4 <sup>1</sup> / <sub>2</sub> x5	426	43.3	12-2600	330-1700	15.0	.....	.....	.....	abcf	
33 GMC.	PDA3703	37	IC	239	420	366	80 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	16820	10.00/20	Own... 4-71-2 D R	4-4 <sup>1</sup> / <sub>2</sub> x5	294	28.9	147-2000	425-1200	17.1	500-1000	.....	.....	abcf
34 PDA4101	41	IC	247	420	387	79 <sup>1</sup> / <sub>2</sub> -70 <sup>1</sup> / <sub>2</sub>	18056	11.00/20	Own... 6-71-2 D TR	6-4 <sup>1</sup> / <sub>2</sub> x5	426	43.3	200-1200	600-1200	17.1	500-1000	.....	.....	abcf	
35 TGH2708	27	CS	151 <sup>1</sup> / <sub>2</sub>	296 <sup>1</sup> / <sub>2</sub>	258	81 <sup>1</sup> / <sub>2</sub> -75 <sup>1</sup> / <sub>2</sub>	9060	8.25/20	Own... 270 4-G TR	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	270	34.0	107-3200	207-1800	17.1	505-1000	.....	.....	abcf	
36 TGH-3101	31	CS	180	341 <sup>1</sup> / <sub>2</sub>	287	81 <sup>1</sup> / <sub>2</sub> -75 <sup>1</sup> / <sub>2</sub>	9430	8.25/20	Own... 270 4-G TR	6-3 <sup>1</sup> / <sub>2</sub> x4 <sup>1</sup> / <sub>2</sub>	270	34.0	107-3200	207-1800	17.1	505-1000	.....	.....	abcf	
37 TDM3209	32	CS	182 <sup>1</sup> / <sub>2</sub>	341 <sup>1</sup> / <sub>2</sub>	306	80 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	13885	9.00/20	Own... 4-71-2 D R	4-4 <sup>1</sup> / <sub>2</sub> x5	284	28.9	133-2000	400-1200	17.1	500-1000	.....	.....	abcf	
38 TGM3209	32	CS	182 <sup>1</sup> / <sub>2</sub>	341 <sup>1</sup> / <sub>2</sub>	306	80 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	13264	9.00/20	Own... 503 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	503	49.9	177-2800	410-1200	6.5	150-1000	.....	.....	abcf	
39 TDM3612	36	CS	210 <sup>1</sup> / <sub>2</sub>	369 <sup>1</sup> / <sub>2</sub>	337	80 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	14360	9.00/20	Own... 4-71-2 D R	4-4 <sup>1</sup> / <sub>2</sub> x5	284	28.9	133-2000	400-1200	17.1	500-1000	.....	.....	abcf	
40 TGM3612	36	CS	210 <sup>1</sup> / <sub>2</sub>	369 <sup>1</sup> / <sub>2</sub>	337	80 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	13742	9.00/20	Own... 503 4-G TR	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	503	49.9	177-2800	410-1200	6.5	150-1000	.....	.....	abcf	
41 TDM4010	40	CS	238 <sup>1</sup> / <sub>2</sub>	396 <sup>1</sup> / <sub>2</sub>	366	79 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	15645	10.00/20	Own... 6-71-2 D R	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	426	43.3	170-2000	545-1000	17.1	500-1000	.....	.....	abcf	
42 TDM4509	45	CS	238 <sup>1</sup> / <sub>2</sub>	396 <sup>1</sup> / <sub>2</sub>	366	79 <sup>1</sup> / <sub>2</sub> -72 <sup>1</sup> / <sub>2</sub>	16206	10.00/20	Own... 6-71-2 D R	6-4 <sup>1</sup> / <sub>2</sub> x5 <sup>1</sup> / <sub>2</sub>	426	43.3	170-2000	545-1000	17.1					

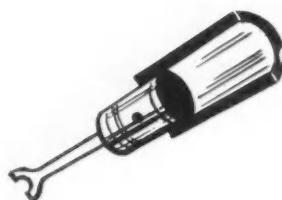
# SELECTION & OPERATION



FUEL SYSTEM		ELECTRICAL SYSTEM		Governor	TRANSMISSION			Universal	REAR AXLE		BRAKES		SPRINGS		RUNNING GEAR								
Carburetor or Injector Pump	Type	Tank Capacity (Gal.)	Ignition System—Make		Max. Governor Speed—M.P.H.	Clutch—Make and Size (in. diam.)	No. of Forward Speeds	Low Speed Ratio—to 1	Type	Number	Size of Series	Make and Model	Standard Gear Ratio—to 1	Type of Applicator	Service Total Lining Area (Sq. In.)	Hand Drum Diam. (In.)	Front No. of Leaves	Length and Width (In.)	Rear No. of Leaves	Length and Width (In.)	Front Axle—Make	Steering Gear—Make	Outside Diameter of Min. Turn Circle (ft.)
Zen. Up 2	120 DR	DR	12-1584	Ce	68	Lg. 17	Spi 4	4.38	M 2	1700	Tim. .59071W 4.11	A 899	18½	Ds 127	†	59-4	†	76-4	Tim	Ro	92	1	
Hol. Up 1½	65 LD	LD	12-158	Va	48	BB 14	Cla 3	4.06	M 2	1500	Tim. .56434W 6.17	A 533	14½	Ds 85	11	60-3	12	64-3	Cla	Ro	61	2	
Hol. Up 1½	65 DR	LD	12-158	Va	50	BB 14	Cla 3	4.06	M 2	1500	Tim. .56434W 6.17	A 533	14½	Ds 85	12	60-3	12	64-3	Cla	Ro	67	3	
Zen. Up 2	88 DR	LD	12-158	—	45	—	Spi** If	—	H 2	1600	Tim. .58285W 6.17	A 690	16½	Ds 101	†	60-4	†	72-4	Tim	Gem	72	4	
Zen. Up 2	107 DR	LD	12-158	—	52	—	Spi** If	—	H 2	1700	Tim. .59070W 5.14	A 830	16½	Ds 127	†	66-4	†	76-4	Tim	Ro	85	5	
Zen. Up 2	107 DR	LD	12-158	Ce	64	Lg. 17	Spi 4	4.38	M 2	1700	Tim. .59070W 4.11	A 830	16½	Ds 127	†	66-4	†	76-4	Tim	Ro	85	6	
Zen. Up 2	120 DR	DR	12-1584	Su	65	Lg. 14	Cla 52	5.22	M 2	1600	Tim. .58433 4.55	A 760	16½	Ds 73	10	51-4	11	64½-4	Tim	Ro	83	7	
Zen. Do 2	100 DR	DR	12-180	Su	73	Lg. 17	Spi 4	3.94	M 2	1700	Tim. .R100 4.11	A 850	15	Ds 65	—	Special	—	Special	Tim	Ro	66	8	
Zen. Do 2	150 DR	LD	12-180	Su	48	Spi. 14	Spi** If	6.60	H 2	1600	Tim. .L110B 6.16	A 636	15	Ds 60	—	Special	—	Special	Tim	Ro	83	9	
Zen. Do 1½	100 DR	LD	12-180	Su	49	Spi. 16	Spi** If	6.60	H 2	1700	Tim. .R110 6.16	A 850	15	Ds 65	—	Special	—	Special	Tim	Ro	55	10	
Car. Do 1½	65 DR	DR	12-158	53	Roc.	11	Spi 4	4.57	M 2	1500	Tim. .H110P 6.16	A 618	16½	Ds 45	10	60-3	16	60-3	Tim	Ro	59	11	
Zen. Up 1½	65 DR	DR	12-158	Su	57	Roc.	14	B.L. 3	3.98	M 2	1500	Tim. .L110 5.28	A 636	16½	Ds 45	14	60-3	16	60-3	Tim	Ro	61	12
Zen. Do 40 DR	DR	12-	—	Ng. Roc.	11	Fu 5	6.52	M 4	54	C 5 Tim.53588TW-X 5.14	A 417	—	Ds 88	10	46-2½	10	52-2½	Tim	Ro	—	15		
Hol. Do 2	100 DR	LD	12-	Su	54	Roc. 14	Fu 5	6.52	M 2	1500	Tim. .56410-PA 5.28	A 598	17½	Ds 14	14	52-3	16	58-3	Tim	Ro	—	16	
Hol. Do 2	92 DR	LD	12-120	Su	74	LR. 15	Fu 5	8.08	M 2	1500	Tim. .L110 4.11	A 696	4	Ds 16	16	54-3	17	64-3	Tim	Ro	80	17	
Cum. 90	—	LD	12-110	Su	68	LR. 17	Fu 5	6.37	M 2	1600	Tim. .Q110-DPA 4.62	A 615	—	Ds 15	—	54-4	—	70-4	Tim	Ro	80	18	
Hol. Up 30	Fo	Fo	6-130	Op	68	Lg. 11	W 3	3.71	M 2	—	Tim. .F3COE 4.86	H 215	10½	Ds 40	10	36-1½	12	45-2½	Tim	Gem	64.6	19	
Hol. Up 30	Fo	Fo	6-130	Op	68	Lg. 11	W 3	3.71	M 2	—	Tim. .F3COE 4.86	H 215	10½	Ds 40	10	36-1½	12	45-2½	Tim	Gem	64.6	20	
Zen. Up 1½	60 DR	DR	12-160	Ce	55	LR. 13	Cla 3	3.90	M 4	1400	Tim. .557	A 594	16½	Ds 88	12	54-3	12	60-3	Tim	Ro	59	21	
Zen. Up 1½	73 DR	DR	12-160	Ce	65	LR. 13	Cla 4	5.00	M 3	1400	Tim. .7.85	A 796	14½	Ds 88	11	50-3	13	63½-3	Tim	Ro	68½	22	
Car. Do 115	DR	DR	12-155	Ce	69	Che. 11	Spi 4	4.38	M 2	1600	Tim. .L110 4.11	A 616	—	Ds 16	11	56-4	14	60-4	Tim	Ro	74.5	23	
Str. Do 80 DR	DR	DR	12-155	Ce	66	Spi. 13	Spi 4	4.57	M 2	1500	Tim. .H110 5.83	A 616	—	Ds 12	12	52-3	15	56-3	Tim	Ro	76	24	
Car. Do 80 DR	DR	DR	12-155	Ce	64	Che. 11	Spi 4	7.06	M 2	1400	Tim. .53587TWX 5.83	A 616	—	Ds 12	12	52-2½	15	56-2½	Tim	Ro	76	25	
Str. Do 80 DR	DR	DR	12-155	Ce	66	Spi. 13	Spi 4	4.57	M 2	1500	Tim. .H110 5.83	A 616	—	Ds 12	12	52-3	15	56-3	Tim	Ro	82.7	26	
Str. Do 80 DR	DR	DR	12-155	Ce	66	Spi. 13	Spi 4	4.57	M 2	1500	Tim. .H110 5.83	A 616	—	Ds 12	12	52-3	15	56-3	Tim	Ro	82.7	27	
Car. Do 80 DR	DR	DR	12-155	Ce	66	Che. 11	Spi 4	7.06	M 2	1400	Tim. .53587TWX 5.83	A 616	—	Ds 12	12	52-2½	15	56-2½	Tim	Ro	82.7	28	
Str. Do 80 DR	DR	DR	12-155	Ce	66	Spi. 13	Spi 4	4.57	M 2	1500	Tim. .H110 5.83	A 616	—	Ds 12	12	52-3	15	56-3	Tim	Ro	88	30	
Str. Do 80 DR	DR	DR	12-155	Ce	66	Spi. 13	Spi 4	4.57	M 2	1500	Tim. .H110 5.83	A 616	—	Ds 12	12	52-3	15	56-3	Tim	Ro	88	31	
Bos. 80	DR	DR	12-155	Ce	59	Spi. 13	Spi 4	4.57	M 2	1500	Tim. .H110 5.71	A 616	—	Ds 12	12	52-3	15	56-3	Tim	Ro	88	32	
Own. 100	—	DR	12-1804	Ce	57	Lg. 15½	Cla 4	4.88	M 2	1600	Tim. .58352WX4 4.11	A 646	14½	Ds 136	11	53-4	12	67-4	Tim	Ro	96	33	
Own. 100	—	DR	12-1504	Ce	67	Lg. 17	Spi 4	3.86	M 2	1700	Tim. .59039WX2 3.55	A 705	14½	Ds 125½	11	58-4	13	72-4	Tim	Ro	84	34	
Zen. Do 1½	60 DR	DR	12-155	Ce	52	—	GH 4	3.82	M 2	1400	Tim. .R1203 6.33	A 496	14½	Ds 62.8	11	52-3	11	59-3	Cla	Sag	80	35	
Zen. Do 1½	60 DR	DR	12-155	Ce	52	—	GH 4	3.82	M 2	1400	Tim. .R1203 6.33	A 633	14½	Ds 62.8	11	52-3	11	59-3	Cla	Sag	66	36	
Zen. Do 1½	65 DR	DR	12-1264	Ce	59	Lg. 17	Spi 4	4.36	M 2	1600	Tim. .57452WX4 3.87	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	68½	37	
Zen. Do 1½	65 DR	DR	12-1264	Ce	56	Lg. 15½	Spi 3	3.50	M 2	1600	Tim. .57452WX4 5.43	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	66½	38	
Zen. Do 1½	85 DR	DR	12-1264	Ce	59	Lg. 17	Spi 4	4.36	M 2	1600	Tim. .57452WX4 3.87	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	73	39	
Zen. Do 1½	85 DR	DR	12-1264	Ce	56	Lg. 15½	Spi 3	3.50	M 2	1600	Tim. .57452WX4 5.43	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	73	40	
Zen. Do 1½	85 DR	DR	12-1264	Ce	61	Lg. 17	Spi 4	4.36	M 2	1700	Tim. .58460WX3 3.87	A 764	14½	Ds 104	10	60½-4	13	62-4	Tim	Sag	80	41	
Zen. Do 1½	85 DR	DR	12-1264	Ce	47	—	Int. 10½	5.62	M 3	1600	Tim. .57460WX1 4.71	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	68½	43	
Zen. Do 1½	85 DR	DR	12-1264	Ce	55	—	Int. 10½	5.62	M 3	1600	Tim. .57460WX1 4.71	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	68½	44	
Zen. Do 1½	85 DR	DR	12-1264	Ce	47	—	Int. 10½	5.62	M 3	1600	Tim. .57460WX1 4.71	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	73	45	
Zen. Do 1½	85 DR	DR	12-1264	Ce	55	—	Int. 10½	5.62	M 3	1600	Tim. .57460WX1 4.71	A 646	14½	Ds 69	9	60½-4	12	62-4	Tim	Sag	73	46	
Zen. Do 1½	85 DR	DR	12-1264	Ce	48	—	Int. 10½	5.62	M 3	1700	Tim. .58470WX1 4.71	A 764	14½	Ds 104	10	60½-4	13	62-4	Tim	Sag	80	47	
Hol. Do 31 AL	AL	AL	6-205	58	Int. 10½	5.62	Int. 5	6.52	M 3	1600	Tim. .R1560 5.62	H 421	—	Ds 75	—	46-2½	11	54-3	Int	Ro	59	49	
Hol. Do 31 AL	AL	AL	6-205	57	Int. 10½	5.62	Int. 5	6.52	M 3	1600	Tim. .R1560 5.62	H 421	—	Ds 75	9	46-2½	11	54-3	Ro	59	50		
Zen. Up 1½	75 DR	DR	12-158	Ce	24	Spi 14	Spi 14	4.38	M 2	1600	Own. .RA106 Var	A 609	15	Ds 61	11	62-3½	15	62-4	Own	Gem	55	51	
Zen. Up 1½	75 DR	DR	12-158	Ce	24	Spi 14	Spi 14	4.38	M 2	1600	Own. .RA106 Var	A 609	15	Ds 61	11	62-3½	15	62-4	Own	Gem	64	52	
Zen. DD 1½	100 DR	DR	12-158	Ce	20	Spi 16	Spi 16	4.38	M 2	1700	Own. .RA103 Var	A 748	16½	Ds 122	11	70-4	15	62-4	Own	Gem	75	53	
Bos. B	100	DR	12-200	H	20	Spi 16	Spi 16	4.38	M 2	1700	Own. .RA103 Var	A 748	16½	Ds 122	11	70-4	15	62-4	Own	Gem	75	54	
Zen. DD 1½	100 DR	DR	12-158	Ce	20	Spi 16	Spi 16	4.38	M 2	1700	Own. .RA103 Var	A 748	16½	Ds 122	11	70-4	15	62-4	Own	Gem	80	55	
Bos. B	100	DR	12-200	H	20	Spi 16																	

# TRANSPORTATION ENGINEERING FORMULAS

**Providing basic data which can be used conveniently in figuring  
horsepower, torque, speed, tire revolutions and vehicle performance**



## PISTON DISPLACEMENT

$$\text{Piston Displacement in cu. in.} = B \times B \times .7854 \times S \times \text{No. of Cylinders}$$

B = Bore

S = Stroke

.7854 = Constant comprising the conversion of the area of a square to the area of a circle of the same dimensions

## HORSEPOWER

Maximum Net Horsepower (maximum gross horsepower less power consumed by engine accessories) is the only horsepower that should be used in transportation engineering formulas, and can be determined only by using a dynamometer or may be procured from the manufacturer.

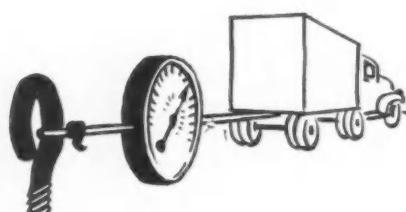
## AMA HORSEPOWER

(For License Purposes Only)  
 $B \times B \times \text{No. of Cyl.}$

$$\text{AMA HP} = 2.5$$

B = Cylinder Bore

2.5 = Constant based on average engine in 1908



## DRAWBAR PULL

$$DP = \frac{.90 \times \text{lb. in. Torque} \times \text{FGR}}{R} .012 \text{ GVW}$$

DP = Drawbar Pull

R = Rolling Radius in Inches

FGR = Final Gear Ratio

GVW = Gross Vehicle Weight

.90 = Efficiency for all rear axles except worm, then .85.

lb. in. Torque = 12 times Torque in lb. ft.

.012 = 12 lb. per 1000 lb. Rolling Resistance

## VEHICLE SPEED

$$\text{MPH} = \frac{\text{RPM} \times R}{168 \times \text{FGR}}$$

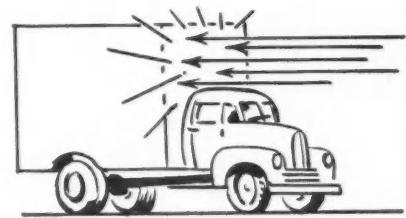
MPH = Miles Per Hour

RPM = Engine Revolutions Per Minute

R = Rolling Radius in Inches

FGR = Final Gear Ratio

168 = A constant comprising the conversion of rolling radius in inches to wheel circumference in feet; wheel revolutions per minute to wheel revolutions per hour; feet per hour to miles per hour

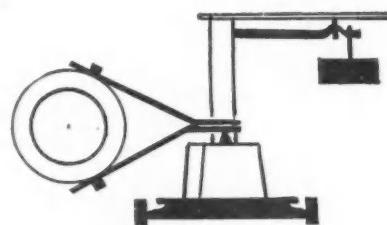


## AIR RESISTANCE

$$\text{Air Resistance} = .0025 \times (\text{MPH})^2 \times FA$$

FA = Frontal area of equipment in sq. ft.

MPH = Miles Per Hour



## MAX. NET ENGINE TORQUE

Torque in lb. ft. = .80 × cu. in. Piston Displacement. (This is approximate and should be used only when actual torque is not known.)  
.80 = Average figure based on analysis of a number of torque curves.

## TIRE REV. PER MILE

$$\text{Rev.} = \frac{5280 \times 12}{2 \times 3.1416 \times LR} \quad \frac{10084}{LR}$$

Rev. = Revolutions per Mile  
LR = Loaded Radius in Inches

Note: Revolutions per mile should be furnished for rear wheel tire on dry level pavement at 35 mph. To predetermine this figure without actual road test, correct calculated rev. per mile as follows: For truck and bus tires, deduct  $\frac{1}{2}$  per cent; For passenger car tires, deduct 2%. Data taken from Tire and Rim Assn. Yearbook.

## MAXIMUM NET TORQUE

$$\text{Max. Net Torque} = \frac{\text{Torque at Peak HP} \times 5}{4}$$

(This is approximate and should be used only when actual net torque is not known.)  
5 and 4 = Figures based on an analysis of a number of torque curves

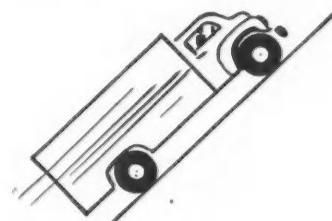
## TORQUE AT PEAK HP

$$\text{Torque at Peak HP} = \frac{HP \times 5252}{RPM}$$

5252 = Constant resulting from the conversion of torque and RPM into horsepower

HP = Maximum net horsepower (See Horsepower formula)

Peak HP = Maximum useful horsepower



## GRADEABILITY

$$GA = \frac{TE}{GVW} - .012$$

GA = Grade Ability

TE = Tractive Effort

GVW = Gross Vehicle Weight

.012 = 12 lb. per 1000 lb., rolling resistance on hard-surfaced roads

## FINAL GEAR RATIO

$$FGR = \frac{R \times GVW \times (GA + .012)}{\text{lb. in. Torque} \times .90}$$

GA = Grade Ability

GVW = Gross Vehicle Weight

lb. in. Torque = 12 × lb. ft. Torque

R = Rolling Radius in Inches

.90 = Efficiency for all rear axles except worm, then .85

.012 = Rolling resistance on hard-surfaced roads

## TRACTIVE EFFORT

$$TE = \frac{\text{lb. in. Torque} \times FGR \times .90}{R}$$

R = Rolling Radius in Inches

FGR = Final Gear Ratio

lb. in. Torque = 12 times Torque in lb. ft.

.90 = Efficiency for all rear axles except worm, then .85

# Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

COMMERCIAL CAR JOURNAL

## Key to Definitions, References and Abbreviations

### DEFINITIONS

#### MAKE AND MODEL

Only Domestic Truck Models are listed.

#### OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

#### CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

#### RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle

Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

#### CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

#### STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

#### MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

#### MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

#### MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

#### MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

#### GEAR RATIO RANGE

Gear Ratio Range in High-Ratios within the range given are available at no extra cost. Exceptions are noted.

#### TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

#### KEY TO REFERENCES

- c.f.—Cab Forward design.
- c.o.e.—Cab-Over-Engine design.
- (D)—Diesel-engine equipped.
- (T)—Designed for tractor use only.
- (C)—Converted Ford or Chevrolet Model.

### MAKES—ALL

B—Bendix  
BL—Brown-Lipe.  
Bu or Bud—Buds.  
BW—Bendix-Westinghouse  
C—Chevrolet.  
Cl or Cla—Clark.  
Co—Continental.  
Cum—Cummins-Diesel.  
Eat—Eaton.  
F—Ford.  
Fu—Fuller.  
G-H—Goodyear-Hawley type.  
H—Hotchkiss.  
Her—Hercules.  
HS—Hall-Scott.  
L—Lockheed.  
LH—Lockheed front, Wagner "hi-Tork" rear.  
LT—Lockheed type front, Timken rear.  
LW—Lockheed front, Wisconsin rear.  
M—Midland.  
N.P.—New Process.  
Or or Own—Own.  
Op or Opt—Optional.  
Shul—Shuler.  
Spl—Spleer.  
T or Tim—Timken-Detroit Axle Co.  
Tw—Timken-Detroit—Westinghouse.  
TW—Timken-Detroit—Wisconsin.  
WG—Warner Gear.  
Wau—Waukesha.  
W or Wis—Wisconsin.  
Wg—Wagner "hi-Tork".  
W—Westinghouse.  
WW—Westinghouse or Wagner

**WHEELS DRIVEN**  
2F—Forward unit of Rear Axle Group.  
2R—Rear Unit of Rear Axle Group.  
4R—Forward and rear units of Rear Axle Group.  
—All wheels.

### BRAKES—SERVICE

#### Location

4—Four Wheels, front and rear.  
4r—Four Wheels, rear only.

#### Type

I—Internal.  
X—External.

#### Operation

A—Air.  
H—Hydraulic.  
V—Vacuum.  
D or Dp—Dual Primary

### BRAKES—HAND

#### Location

C—Center of double propeller shaft.  
2—Rear wheels.  
4—Four wheels.  
6—Six wheels.  
P—Back of Power Divider.  
J—Jackshaft.  
T—Transmission.  
F—Driveshaft.

#### Type

D—Tru-Stop disk.  
I—Internal.  
M—Mechanical.  
X—External.  
PD—Two drums on rear of power divider.

### Brake Drums

#### Material

a—Cast alloy iron.  
A—American Car Foundry  
c—Cast iron.  
Cc—Composite Front, Cast Iron in rear.  
Ce—Centrifuse.  
Cl—Copper iron.  
Co—Composite.  
D—Dayton.  
E—Ermalite.  
G—Gunite.  
N—Nickel iron.  
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

### REAR AXLE

#### Final Drive and Type

B—Bevel.  
CD—Chain Drive  
F—Full-floating.  
H or Hy—Hypoid.  
d—Dual range axle.  
2—Double Reduction.  
S—Spiral bevel.  
W—Worm.  
3/4—Three Quarters Floating.  
1/2—Semi-Floating  
T—Torque Tube

### GEAR RATIOS

(\*\*) Only one ratio.

#### Drive and Torque

H—Hotchkiss (springs).  
R—Radius Rods.  
L—Parallel Torque Rods  
T—Torque Arm.

#### GOVERNOR STANDARD

Y—Yes.  
N—No.

(Continued from Page 139)

Line Number	Make and Model	Wheel-base	Tire Sizes				Engine Details				Trans-Mission		Rear Axle		Front Axle		Brakes		Frame				
			D-dual rear		S-single rear		Model and Manufacturer		Displacement		Comp. Rate		Torque ft. lb.		Torque ft. lb.		Gears in Final		Model and Manufacturer				
			Curb weight Chassis weight for Normal Service		Curb weight Chassis weight for Heavy Service		Model and Manufacturer		Displacement		Cylinders		Bore x stroke		Driver and Torque		Gear Ratio		Model and Manufacturer				
1 Available	(c.o.e.) 200	7000	825/20	5500/7-20/20	Wau BM	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NWG T9	4 Tim E100DPH	H.F.	H.H.	** -6.20 Tim	32502H	T.T.	10x3x14			
2 Available	(c.o.e.) 225	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NWG T97	4 Tim E100DPH	H.F.	H.H.	** -6.20 Tim	32502H	T.T.	10x3x14			
3 Available	(c.o.e.) 250	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
4 Available	(c.o.e.) 275	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
5 Available	(c.o.e.) 300	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
6 Available	(c.o.e.) 325	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
7 Available	(c.o.e.) 350	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
8 Available	(c.o.e.) 375	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
9 Available	(c.o.e.) 400	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
10 (D) Available	(c.o.e.) 400	7000	825/20	5500/7-20/20	Wau BZ	6-4x4	263.5	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	H.F.	H.R.	** -6.20 Tim	32502H	T.T.	10x3x14			
11 Biederman NSH	130	21000	6000	6000/7-25/20	Her XLTD	6-4x4	339.0	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	S.F.	H.H.	** -7.2 Tim	35000H	L.H.I.H.	5x4			
12 Biederman NSD	130	190	21000	6000/7-25/20	Her XLTD	6-4x4	339.0	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	S.F.	H.H.	** -7.2 Tim	35000H	L.H.I.H.	5x4			
13 Biederman NSR	132	171	21000	6000/7-25/20	Her XLTD	6-4x4	339.0	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	S.F.	H.H.	** -7.2 Tim	35000H	L.H.I.H.	5x4			
14 Biederman NSL	93	170	21000	6000/7-25/20	Her XLTD	6-4x4	339.0	9.173	78-2800	7-2-10	10	X	NFU M330	5 Tim L100DPH	S.F.	H.H.	** -7.2 Tim	35000H	L.H.I.H.	5x4			
15 Brown B6572T	144	166	33000	11000/22	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
16 Brown B6572T	144	166	33000	11000/22	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
17 Brown B6572T	144	166	33000	11000/22	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
18 Brown B6572T	144	166	33000	11000/22	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
19 Brown B6572T	144	166	33000	11000/22	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
20 (D) B6572T	144	166	33000	11000/22	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
21 Chevrolet HP	895	116	4000	7570/25/20	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
22 Chevrolet HP	990	115	4000	7570/25/20	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
23 Fwd. Control HT	1005	125	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
24 Fwd. Control HT	1060	137	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
25 Fwd. Control HT	1095	137	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
26 Chevrolet HT	1120	137	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
27 Chevrolet HT	1155	161	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
28 Chevrolet HT	1300	161	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
29 Chevrolet HT	1440	137	7000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
30 Chevrolet TW8	895	116	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
31 Chevrolet TW8	990	116	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
32 Chevrolet TW8	1060	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
33 Chevrolet TW8	1160	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
34 Chevrolet TW8	1275	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
35 Chevrolet TW8	1300	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
36 Chevrolet TW8	1380	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
37 Chevrolet TW8	1440	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
38 Chevrolet TW8	1475	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
39 School bus TW	1520	137	4000	2745/58	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22	12000/24	Wau 140GK	6-4x4	12000	22
40 Corbitt G101B	137	137	22000	19.00/20	Con M6330	6-4x4	424.5	1.173	22000	19.00/20	Con M6330	6-4x4	424.5	1.173	22000	19.00/20	Con M6330	6-4x4	424.5	1.173	22000	19.00/20	
41 Corbitt G301B	137	137	22000	19.00/20	Con M6330	6-4x4	424.5	1.173	22000	19.00/20	Con M6330</												



MACK MODEL EQT DIESEL is proving the answer to lower fuel costs and increased profits for numerous operators in the popular hauling range—45,000 to 58,000 lbs. g.c.w.

Be Profit-Wise  
**modernize with**

That's the good word coming in from long-haul operators all over the country. Many of these Mack diesel owners find that Mack diesels pay back their extra investment in less than a year—in fuel savings alone.

Reporting on the cost-slashing performance of a Mack Model EQT diesel tractor, one mid-western hauler\* says: "From the first day we put this diesel tractor in operation it has been averaging 8.6 miles per gallon, hauling 34,000 lb. payloads. Compared with a gasoline-powered tractor hauling the same loads, running side-by-side, this Mack EQT diesel is saving me far better than 50% in actual fuel costs. At this rate, our Mack diesel will more than pay for itself in no time at all."

Profit-making economy like this can be yours, too, when you switch to Mack diesels. Whether you operate in the 45,000 to 58,000 g.c.w. range, covered by the Model EQT—or up to 73,000 lbs. g.c.w.—there's a thrifty Mack diesel that will give you two-way savings in more miles per gallon at less cost per gallon. See your nearest Mack branch or distributor for a demonstration of what Mack diesel power can do for you.

\*Name on request



Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

(Continued from Page 140)

142

Line Number	MAKE AND MODEL	WHEEL BASE	TIRE SIZES D-dual rear S-single rear	ENGINE DETAILS				TRANSMISSION	FRONT AXLE	REAR AXLE	SERVICE	BRAKES	FRAME	
				Model and Series and Stroke (See Details) Chassis Weight (See Details)	Displacement cu. in.	Comp. Ratio M.p.g. at Brake P.M. M.p.g. at Free P.M.	Main Bearings End Supporter Length							
1	Dodge—Cont'd	109	192	6.34	7.50	20	7.50	20	Own TX-182					
2	B-3-A MA	109	192	6.34	7.50	20	7.50	20	Own T-192					
3	B-2-HM	107	160	6.34	7.50	20	7.50	20	Own T-192					
4	B-2-HMA	107	161	6.34	7.50	20	7.50	20	Own T-192					
5	B-2-HHH	107	160	6.34	7.50	20	7.50	20	Own T-192					
6	B-2-HHA	107	161	6.34	7.50	20	7.50	20	Own T-192					
7	B-2-HHM	107	161	6.34	7.50	20	7.50	20	Own T-192					
8	B-2-HHMA	107	161	6.34	7.50	20	7.50	20	Own T-192					
9	B-2-HHMA	107	161	6.34	7.50	20	7.50	20	Own T-192					
10	B-2-JL	128	212	6.34	7.50	20	7.50	20	Own T-180					
11	B-2-JA	128	212	6.34	7.50	20	7.50	20	Own T-180					
12	B-2-JA	128	212	6.34	7.50	20	7.50	20	Own T-180					
13	B-2-JA	107	161	6.34	7.50	20	7.50	20	Own T-180					
14	B-2-JMA	107	161	6.34	7.50	20	7.50	20	Own T-180					
15	B-2-JMA	107	161	6.34	7.50	20	7.50	20	Own T-180					
16	B-2-JMA	107	161	6.34	7.50	20	7.50	20	Own T-180					
17	B-2-JMA	107	161	6.34	7.50	20	7.50	20	Own T-180					
18	B-2-JAA	107	161	6.34	7.50	20	7.50	20	Own T-180					
19	B-2-K	128	212	6.34	7.50	20	7.50	20	Own T-180					
20	B-2-K	128	212	6.34	7.50	20	7.50	20	Own T-180					
21	B-2-KM	107	161	6.34	7.50	20	7.50	20	Own T-180					
22	B-2-KM	107	161	6.34	7.50	20	7.50	20	Own T-180					
23	B-2-KM	107	161	6.34	7.50	20	7.50	20	Own T-180					
24	B-2-KM	107	161	6.34	7.50	20	7.50	20	Own T-180					
25	B-2-KM	107	161	6.34	7.50	20	7.50	20	Own T-180					
26	B-2-R	128	212	6.34	7.50	20	7.50	20	Own T-180					
27	B-2-R	128	212	6.34	7.50	20	7.50	20	Own T-180					
28	B-2-T	128	212	6.34	7.50	20	7.50	20	Own T-180					
29	B-2-TA	130	190	6.34	7.50	20	7.50	20	Own T-180					
30	B-2-TA	130	190	6.34	7.50	20	7.50	20	Own T-180					
31	B-2-TA	130	190	6.34	7.50	20	7.50	20	Own T-180					
32	YI-YA	130	190	6.34	7.50	20	7.50	20	Own T-180					
33	School Buses	152	170	13.00	6.50	20	7.50	20	Own T-178					
34	B-2-GS	192	192	15.00	7.50	20	7.50	20	Own T-180					
35	B-2-HHS	192	192	15.00	7.50	20	7.50	20	Own T-180					
36	B-2-RS	229	212	15.00	7.50	20	7.50	20	Own T-180					
37	B-2-RS	229	212	15.00	7.50	20	7.50	20	Own T-180					
38	Duplex	T-TH-404	136	220	18.00	6.00	20	6.4X4	9.00	20	Her JXD	Her JXD	Her JXD	Her JXD
39	SH-501	136	220	18.00	6.00	20	6.4X4	9.00	20	Her WLLC-3	Her WLLC-3	Her WLLC-3	Her WLLC-3	
40	JHA	136	220	18.00	6.00	20	6.4X4	9.00	20	Her XBB	Her XBB	Her XBB	Her XBB	
41	JHA	136	220	18.00	6.00	20	6.4X4	9.00	20	Her XBB	Her XBB	Her XBB	Her XBB	
42	JH-558	136	220	18.00	6.00	20	6.4X4	9.00	20	Her XBB	Her XBB	Her XBB	Her XBB	
43	KHA	136	220	18.00	6.00	20	6.4X4	9.00	20	Her XBB	Her XBB	Her XBB	Her XBB	
44	KHA	136	220	18.00	6.00	20	6.4X4	9.00	20	Her XBB	Her XBB	Her XBB	Her XBB	
45		136	220	18.00	6.00	20	6.4X4	9.00	20	Her XBB	Her XBB	Her XBB	Her XBB	
46	Federal	135	194	14.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
47	16M	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
48	16M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
49	18M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
50	18M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
51	25M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
52	25M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
53	29M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
54	29M2	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
55	29ML	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
56	29ML	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
57	29ML	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
58	29MLA	139	250	15.00	6.00	20	6.4X4	9.00	20	Her JCF	Her JCF	Her JCF	Her JCF	
59	35M	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
60	35M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
61	45M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
62	45M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
63	45M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
64	45M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
65	65M	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
66	65M	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
67	65M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
68	65M2	143	205	22.00	9.00	20	6.4X4	9.00	20	Con 6711F	Con 6711F	Con 6711F	Con 6711F	
69	Ford F-1	930	114	114	47.00	22.00	6.00	11-4	9.00	20	Con R602F	Con R602F	Con R602F	Con R602F
70	F-2 Cow.	960	114	114	47.00	22.00	6.00	11-4	9.00	20	Con R602F	Con R602F	Con R602F	Con R602F
71	F-2 Cow.	105	122	122	57.00	25.00	6.00	10-6	9.00	20	Con R602F	Con R602F	Con R602F	Con R602F

†—Front only; Rear 8.00/20.  
‡—Front only; Rear 8.50/20.

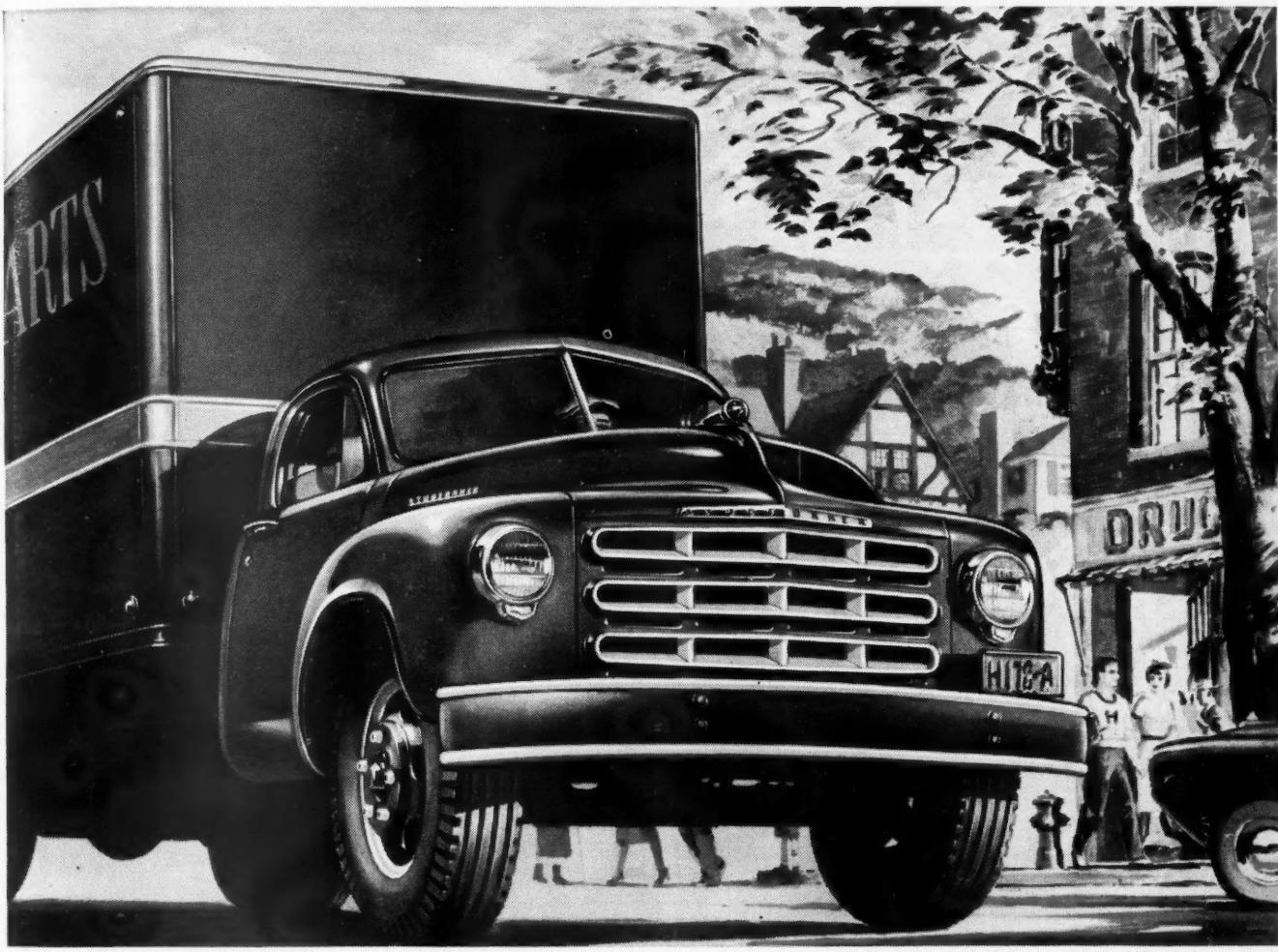
§—Front only; Rear 8.50/20.

\*\*—Auxiliary trans. Spicer 6231B, three forward

ratios available on these two models.

\*\*—For shorter wheelbase—10-3½'.

\*\*—Standard 8.00/20.



2-ton shown with 15-foot van body—1½-ton also available

## New pulling power—staying power—earning power!

**A**LMOST everywhere you look in a Studebaker truck, you find important improvements in design that cut operating costs.

The massive, pressed-steel Studebaker truck frame, for example, extends well beyond the rear axle for increased load protection and lengthened body life.

The front of the frame is reinforced with a rigid, twist-resisting, special K-member—an exclusive new Studebaker method of strengthening the whole forward structure of the truck.

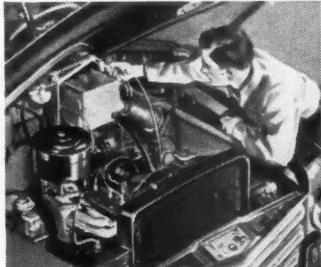
### Gas-saving automatic overdrive, too!

Studebaker's gas-saving automatic overdrive is now available in all  $\frac{1}{2}$  ton and  $\frac{3}{4}$  ton models. It's extra cost but starts paying its way right away in extra thrift.

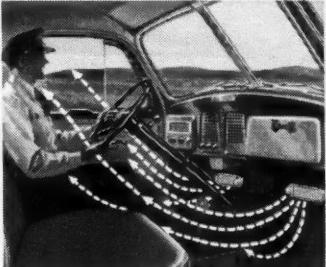
Stop in and see the Studebaker trucks— $\frac{1}{2}$  ton,  $\frac{3}{4}$  ton, 1 ton, 1½ ton, 2 ton models.

### STUDEBAKER TRUCKS

*Noted for low-cost operation*



**Just lift the hood! Everything's easy to get at!** No standing on a box is necessary when you want to work on the engine or the ignition! No stooping under the dash to find instrument panel wiring! Everything is within easy arm's reach.



**Foot-controlled floor ventilation airs the roomy Studebaker cab!** Wide seat. Comfortable Adjusto-Air cushion. Extra large windshield and windows. Weather-protected steps enclosed inside doors. Tight-gripping rotary door latches.



**Studebaker's streamlined  $\frac{1}{2}$  ton,  $\frac{3}{4}$  ton and 1 ton pick-ups have double-walled heavy-gauge metal body—tail gate hinged at center and each end—loads slide on and off with ease. Big-visibility rear window aids backing and parking.**



**Wear-resisting Studebaker craftsmanship is the pride of father-and-son teams and thousands of other trustworthy Studebaker workmen. They build long-lasting soundness into all Studebaker trucks.**  
Studebaker, South Bend 27, Indiana, U.S.A.

(Continued from Page 142)

Line Number	MAKE AND MODEL	WHEEL-BASE	TIRE SIZES	ENGINE DETAILS		TRANSMISSION	REAR AXLE	FRONT AXLE	BRAKES		FRAME	
				Dual rear Single rear	Main Bearings				Model and Length and Diameter and Stroke No. of Cylinders and Bores	Model and Displacement		
1 F-3 Cowl...9H1Q-84	Ford, Continued	1120 122 122 122	6800 28497.00/17.6S 7.50/17.88	Own THY	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 51Y	4 Own 8Y	SF H	** -86 Own 8RD	M2	48.06/6246x19 T	
2 Cowl...9H2Q-84		1150 122 122	6800 2859.700/17.48S 7.50/17.88	Own 8RY	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 51Y	4 Own 8Y	SF H	** -86 Own 8RD	M2	48.06/6246x19 T	
3 F-3 Panel DIVY		104 104 104	7800 3100/7.00/16.6 7.50/17.88	Own SHJ	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 8J	3 Own 8J	SF H	** -86 Own 8J	TX	827 6246x19 T	
4 W/a...9H2S		1375 1390 1390	104 104 104	7800 3100/7.00/16.6 7.50/17.88	Own SHJ	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 8J	3 Own 8J	SF H	** -86 Own 8J	TX	827 6246x19 T
5 F-4 Cowl...9HTL-84		1175 134 134	10000 34577.00/20-S87.00/18-8	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-5 83 Own 7RTL	TX	60.06/7224x21 T	
6 F-5 Cowl...9RPTL-84		1205 134 134	10000 34977.00/20-S87.00/18-8	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-5 83 Own 7RTL	TX	60.06/7224x21 T	
7 Cowl...9HT-84		1220 134 134	14000 34466.50/20-6	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
8 Cowl...9HT-84		1250 134 134	14000 34866.60/20-6	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
9 Cowl...9RST-84		1250 134 134	14000 34796.60/20-6	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
10 Cowl...9RST-84		1250 134 134	14000 34362.60/20-6	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
11 Cowl...9HT-84		1375 1390 1390	14000 34266.60/20-6	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
12 Cowl...9HT-84		1375 1390 1390	14000 34666.60/20-6	Own SHT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
13 F-5 COE		1340 134 134	10000 34266.40/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
14 Cab...9RPTL-84		1340 134 134	14000 34866.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
15 Cab...9RPTL-84		1340 134 134	14000 34796.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
16 Cab...9RPTL-84		1340 134 134	14000 34362.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
17 Cab...9RPTL-84		1340 134 134	14000 34266.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
18 Cab...9RPTL-84		1340 134 134	14000 34666.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
19 F-6 School Bus		1315 158 158	12000 37556.60/20-6	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
20 Bus CL...9RPTL-84		1345 158 158	12000 37956.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
21 Bus CL...9RPTL-84		1345 158 158	12000 38000.60/20-6	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
22 Bus CL...9RPTL-84		1360 194 194	14000 34360.60/20-6	Own 8HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
23 F-6 Cowl...9HT-84		1610 134 134	16000 38767.60/20-8	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
24 Cowl...9HT-84		1640 134 134	16000 38767.60/20-8	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
25 Cowl...9HT-84		1640 134 134	16000 38767.60/20-8	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
26 Cowl...9HT-84		1640 134 134	16000 38767.60/20-8	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
27 Cowl...9HT-84		1640 134 134	16000 38767.60/20-8	Own 7HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
28 Cowl...9HT-84		1670 158 158	16000 40747.60/20-8	Own 8HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
29 Cowl...9HT-84		1670 158 158	16000 40807.60/20-8	Own 8HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
30 Cowl...9HT-84		1670 158 158	16000 40807.60/20-8	Own 8HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
31 Cowl...9HT-84		1670 158 158	16000 40807.60/20-8	Own 8HT	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
32 F-6 C.O.E.		1990 110 110	16000 45497.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
33 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
34 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
35 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
36 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
37 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
38 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
39 Cab...9RPTL-84		2020 110 110	16000 45897.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
40 Cab...9RPTL-84		2122 158 158	16000 47577.60/20-8	Own 8HW	6-3 3x4 4 2206 8.180 95-3300/4-2 87x5 0	N Own 41T	4 Own 8T	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
41 F-7 Cowl...9EQ-84		28681 147 147	19000 54788.60/25-10	Own SEQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8Q	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
42 F-7 Cowl...9EQ-84		28681 147 147	19000 54788.60/25-10	Own SEQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8Q	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
43 F-7 Cowl...9EQ-84		28735 159 159	19000 54788.60/25-10	Own SEQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8Q	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
44 F-7 Cowl...9EQ-84		29135 159 159	19000 54788.60/25-10	Own SEQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8Q	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
45 F-7 Cowl...9EQ-84		27855 156 156	19000 56080.25/20-10	Own SEQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8Q	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
F-8 Cowl...9EQH-84		3155 147 147	22000 59349.00/20-10	Own 8EQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8QH	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
46 Cowl...9EQH-84		3352 147 147	22000 59349.00/20-10	Own 8EQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8QH	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
47 Cowl...9EQH-84		3352 147 147	22000 59349.00/20-10	Own 8EQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8QH	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
48 Cowl...9EQH-84		3340 147 147	22000 59349.00/20-10	Own 8EQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8QH	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
49 Cowl...9EQH-84		3404 156 156	22000 62349.00/20-10	Own 8EQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8QH	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
50 Cowl...9EQH-84		3255 156 156	22000 62349.00/20-10	Own 8EQ	8-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y Own 7EQ	5 Own 8QH	SF H	H5.14-6 67 Own 7RT	TX	60.06/7224x21 T	
51 Freightliner		112 120	34000 11200 10.00/22	Cum HRB	6-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y FU 4A86	8 Eat 22501	SFD	H4.33-6 67 Tim 27061	O4IA	645 1050a	
52 Kenworth(D)		165 255	28000 12000 10.00/20	Cum HB6	6-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y FU 4A86	4 Tim U200P	H2F	H5.91-9 Tim Fe900DP	WSAIA	722 1174a	
53 Kenworth(D)		165 255	28000 12000 10.00/20	Wau 140GZ	6-3 3x4 4 2206 8.180 95-3600/3-2 87x5 2	Y FU 4A86	5 Tim R100P	HF	H5.29-7 Tim Fe900DP	WSAIA	648 1168a	
54 Lim. ....		166 255										

# Reflecting 39 years of progress in Oil Control!

# Sealed Power

## MD-50 STEEL OIL RING

**The only ring with the FULL-FLOW SPRING**

Best—even in  
**BADLY TAPERED**  
and  
**OUT-OF-ROUND BORES**

**Sealed Power Corporation**  
**Muskegon, Michigan**

The image shows a weathered, dark-colored sign. At the top, the words "W.M. Wicks & Sons" are written in a serif font, with "W.M." on the left and "Wicks & Sons" on the right. Below this, in larger, bold, and slightly irregular letters, is "100-20 STREET". Underneath "STREET", the word "LONG" is partially visible. At the bottom of the sign, the words "ISLAND CITY" are written in a bold, sans-serif font. The entire sign is set against a background of a textured wall or surface.



# Sealed Power Piston Rings

BEST IN NEW TRUCKS

BEST IN OLD TRUCKS

## (Continued from Page 144)

146

Line Number	MAKE MODEL	Chassis List Price	WHEEL-BASE	TIRE SIZES	ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE		BRAKES		FRAME		
					Front and Rear Suspension		Main Bearings		Differential and Shaft		Model and Speeds		Model and Speeds		Model and Speeds		Model and Speeds		
					Leaf Springs		Cylinders		Stroke, in.		Displacement cu. in.		Torque Ratio		H.P. at R.P.M.		Differential Ratios		
1	Reo	E-10X	125	125	8000	4406	700/208	825/208	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim 53547	SF H-14	57-6-16	Tim 30000	TX
2		E-19A	125	125	8000	4406	750/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
3		E-19B	125	125	8000	4406	750/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E300	HFD H-16	57-6-18	Tim 30000	TX
4		E-19C	125	125	8000	4406	750/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
5		E-19L	165	165	16000	5354	750/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
6		E-19R	187	187	16000	5354	825/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
7		E-2IA	125	125	16500	5311	825/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
8		E-2IB	150	150	16500	5449	825/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
9		E-2IC	170	170	16500	5577	825/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
10		E-2IIA	185	185	16500	5696	825/20	825/20	2192	192	89-3100	7-2146	0.7	Y WG T97	4 Tim E100+	HFD H-16	57-6-18	Tim 30000	TX
11		E-2IIB	130	130	18000	6163	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
12		E-2IIT	130	130	20000	6745	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
13		E-2IIR	150	150	18000	6338	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
14		E-2IRC	185	185	18000	6338	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
15		E-2IIL	130	130	20000	6163	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
16		E-2IIR	185	185	20000	6745	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
17		E-2IA	130	130	20000	6745	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
18		E-2IB	150	150	20000	6338	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
19		E-2IC	170	170	20000	6465	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
20		E-2IIA	185	185	20000	6600	900/20	900/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
21		E-2IIR	130	130	23000	6700	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
22		E-2IIT	150	150	23000	7200	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
23		E-2IRC	185	185	23000	6910	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
24		E-2IIL	170	170	23000	7100	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
25		E-2IIR	185	185	23000	7260	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
26		E-2IA	130	130	24000	8090	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
27		E-2IB	150	150	24000	7810	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
28		E-2IC	185	185	24000	7700	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
29		E-2IIA	130	130	25000	6700	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
30		E-2IIR	150	150	25000	6338	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
31		E-2IIL	185	185	25000	6700	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
32		E-2IIR	130	130	26000	7300	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
33		E-2IA	150	150	26000	7530	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
34		E-2IB	170	170	26000	7530	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
35		E-2IC	185	185	26000	7650	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
36		E-2IIA	130	130	27000	7300	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
37		E-2IIR	150	150	27000	7100	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
38		E-2IIL	185	185	27000	7200	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
39		E-2IIR	130	130	28000	7300	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
40		E-2IA	150	150	28000	8090	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
41		E-2IB	170	170	28000	7530	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
42		E-2IC	185	185	28000	8170	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
43		E-2IIA	130	130	29000	8170	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
44		E-2IB	150	150	29000	8200	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
45		E-2IC	170	170	29000	8180	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
46		E-2IIA	185	185	29000	8200	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
47		E-2IB	200	200	29000	8200	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
48		E-2IC	215	215	29000	8200	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
49		E-2IIA	165	165	30000	11360	100/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	5 Tim H100+	HFD H-16	57-6-18	Tim 30000	TX
50	Studebaker	HD97	148	175	24000	9150	90/20	100/20	2192	192	90-3100	7-2146	0.7	Y WG T97	6 Tim 4405	H-14	57-6-16	Tim 30000	TX
51		HD105	148	175	24000	10500	10/00	20/00	2192	192	90-3100	7-2146	0.7	Y WG T97	6 Tim 4405	H-14	57-6-16	Tim	



## ONE OF THE FEATURES THAT SOLD US *Wagner Air Brakes* IS THE *Rotary Air Compressor*



NIGHTHAWK FREIGHT SERVICE, INC.  
ST. LOUIS 4, MO.

CHICAGO TERMINAL  
GENERAL OFFICE  
330 W. DICKINSON  
WABASH 6-1240

REPLY TO  
WAGNER ELECTRIC CORPORATION  
6400 PLYMOUTH AVENUE  
ST. LOUIS 14, MISSOURI

October 12, 1949

Wagner Electric Corporation  
6400 Plymouth Avenue  
St. Louis 14, Missouri

Gentlemen:

Maintenance economy is a factor that must be considered if over-the-road fleet operations are to be profitable.

For this reason we are especially careful in the selection of all material and equipment used on our fleet. It must be of high quality to enable it to stand up under hard use.

Our experience with Wagner Air Brakes has been very satisfactory. They have what it takes to operate efficiently and economically in tough, over-the-road service.

One of the features that sold us on Wagner Air Brakes is the Rotary Compressor. After years of operation we have not had a single compressor failure — they've got to be good to stand up like this on many of our hauls where brake applications are frequent.

Very truly yours,  
NIGHTHAWK FREIGHT SERVICE, INC.  
*F. Harrison*  
Garage Foreman

### FOR BRAKE SERVICE ECONOMY ...Wagner Air Brakes are YOUR BEST BUY

It takes men like Mr. F. Harrison, who are really responsible for continuous, safe fleet operation to evaluate the worth of air brakes. For braking efficiency and brake service economy, Wagner Air Brakes are your best buy because Wagner is the only system with the famous *Rotary Air Compressor*.

Cost-wise truck operators across the nation know that Wagner Air Brakes offer greater value than any other brake. For brake safety and economy install Wagner Air Brakes on your trucks, tractors, trailers and buses. When you order new equipment specify WAGNER. Write for Bulletin KU-50.



**Wagner Electric Corporation**

6470 Plymouth Avenue, St. Louis 14, Mo., U.S.A.

LOCKHEED HYDRAULIC BRAKE PARTS AND FLUID...NoReL...CoMaX BRAKE LINING...AIR BRAKES...TACHOGRAPHS...ELECTRIC MOTORS...TRANSFORMERS...INDUSTRIAL BRAKES

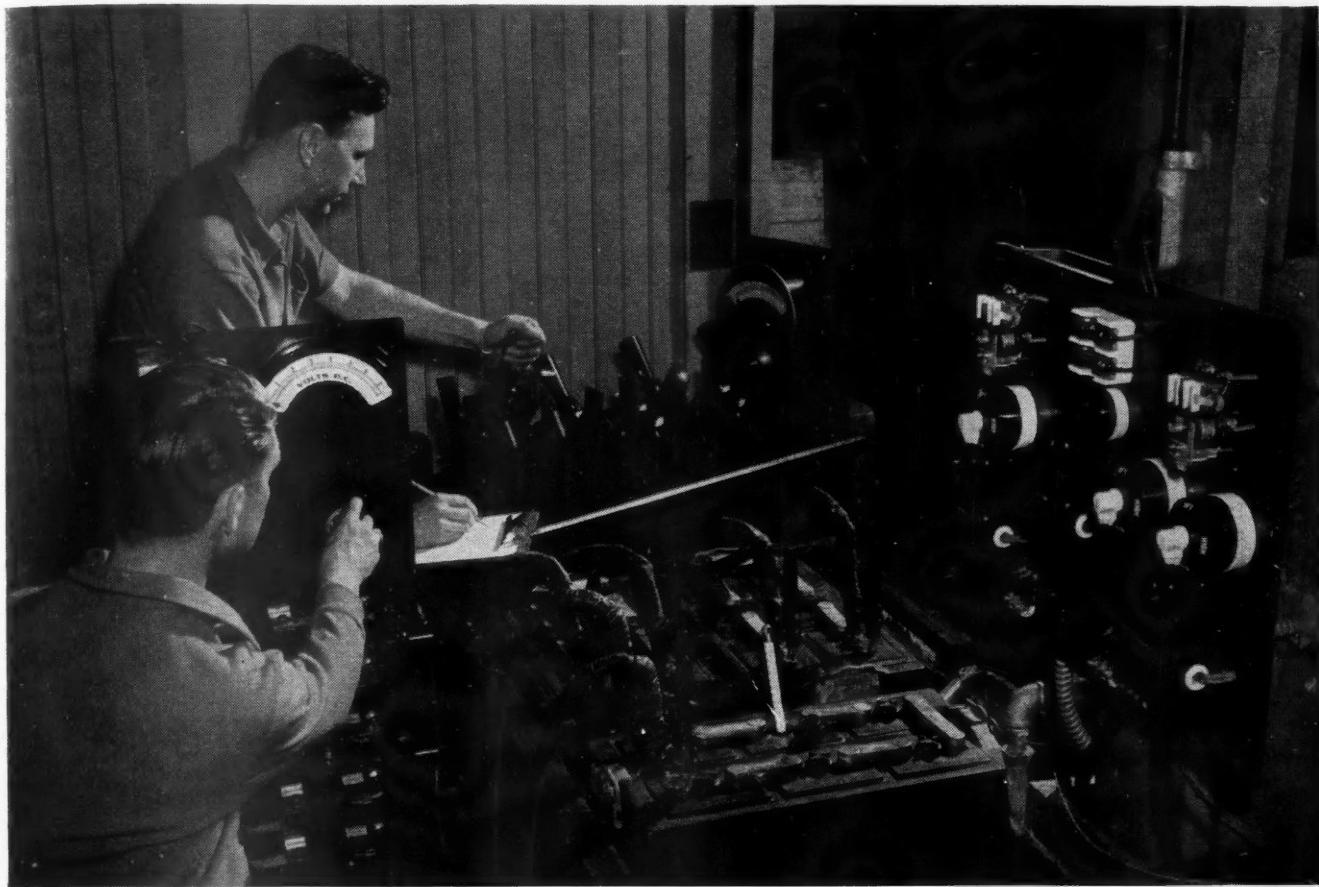
(Continued from Page 146)

\*—Complete vehicle with pick-up type body

—1091 cu. in.

—1091 cu. in.

#### Timken T77 2-speed Transfer Case.



## The tough overcharge test where Exide Batteries "get the works"

It's one of many tests that Exide Batteries must pass to make sure that they will give you top performance in rugged service. To fleet owners, whose trucks are used chiefly during the daytime when overcharging is most frequent, this test is of major importance.

The test shows how plates and separators stand up under continuous overcharge . . . not for a brief period, but for as long as 48 weeks, and at an average temperature of 100°F.

Results of the overcharge test show that Exide Batteries greatly exceed the minimum requirements of the S.A.E. standard. This and other tests assure you that when your batteries are Exides, you can count on dependable performance, long battery life, minimum maintenance and low cost per mile of operation.

THE ELECTRIC STORAGE BATTERY COMPANY  
Philadelphia 32  
*Exide Batteries of Canada, Limited, Toronto*

"Exide" Reg. Trade-mark U.S. Pat. Off.



Service-proved features that make Exide outstanding for motor truck service

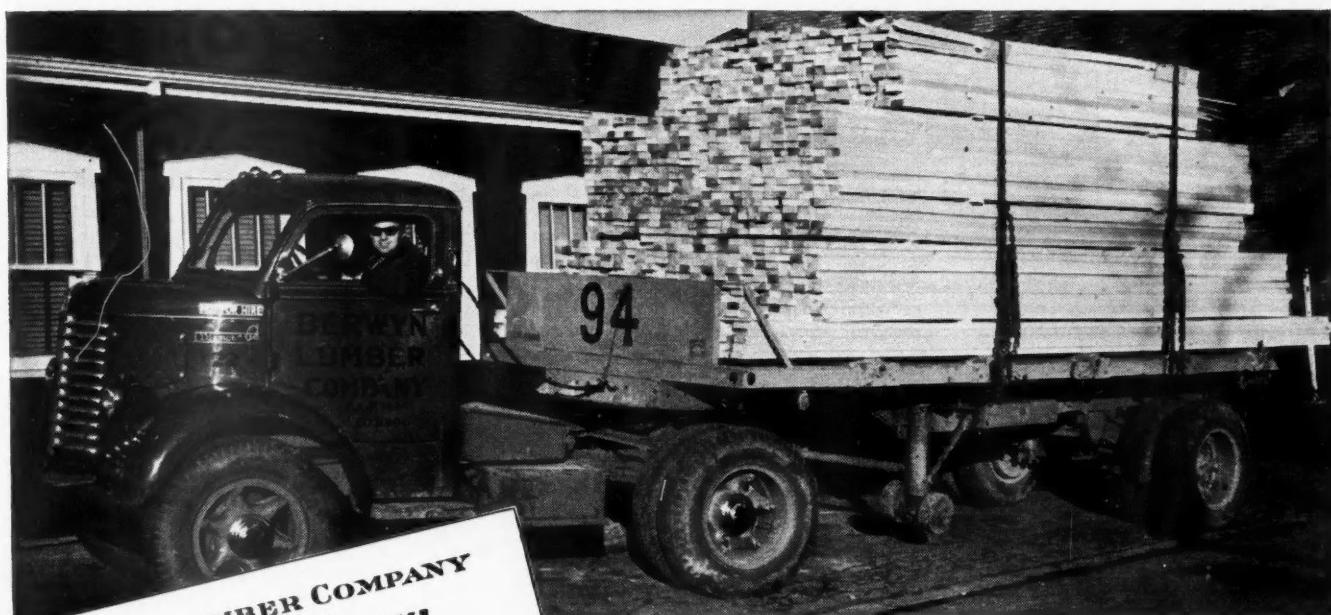
- Heavy, oversize plates.
- Greater capacity.
- Self-cleaning, non-spitting vent plugs.
- Double insulation between plates.
- "Bull's-Eye" electrolyte leveling device.
- Heavy inter-cell connectors.
- Hard rubber container.
- Positive cover seals.

1888 . . . DEPENDABLE BATTERIES FOR 62 YEARS . . . 1950



# USER REPORT:

**"Our Fleet of 25 Trailers is equipped with Warner Electric Brakes . . . We only spent \$129.18 in 1949 for Maintenance Parts"**



**BERWYN LUMBER COMPANY**  
ESTABLISHED 1895  
YELLOW PINE & PACIFIC COAST LUMBER  
RAILWAY MATERIAL - OAK  
BERWYN, ILLINOIS  
(LUMBER & TIMBER)

CHICAGO OFFICES  
LUMBER 1-8176.  
NORTH PHONES  
STANLEY 6-6000

Warner Electric Brake Mfg. Co.  
Beloit, Wisconsin

December 8, 1949

Gentlemen:  
Our fleet of 25 trailers is equipped with Warner Electric Brakes. The first electric brakes were purchased in 1924 and some of these brakes are still in service.

We deliver in the Chicago area covering a radius of approximately 100 miles. We have been told that 10,000 miles of city driving is equal to 50,000 miles on the highways. If these figures are correct, you can readily see our brakes must give exceptional service.

Orval Black, our Service Manager, is a Warner enthusiast because of the limited amount of service required on Warner Electric Brakes. In fact, I have his report in front of me and find we only spent \$129.18 in 1949 for maintenance parts.

Yours very truly,  
BERWYN LUMBER COMPANY  
*C J Willis*  
Vice President

CRW:lej

ONCE a Warner Electric Brake user — always a Warner Electric Brake user. Read Mr. Willis' letter and you'll see why!

Warner Electric Brakes are specifically engineered to meet every trailer braking need. No other brakes equal their rugged construction, long lining life, positive control and dependable performance even under the most severe conditions, of rain, snow and ice.

Being activated by electricity, they are instantaneous in action — a vital factor in emergencies.

**CHECK YOUR BRAKE PERFORMANCE AND MAINTENANCE COSTS!** If you want maximum safety plus economical performance, standardize on Warner Electric Brakes. Write for illustrated literature explaining their many advantages.

**WARNER ELECTRIC BRAKE MFG. CO.**  
BELOIT, WISCONSIN

**WARNER**  
**ELECTRIC BRAKES**

SINCE 1927

LINE NUMBER	MAKE AND MODEL	CHARLES LINE PRICE	WHEEL BASE	TIRE SIZES D-dual rear S-single rear	ENGINE DETAILS		TRANSMISSION	REAR AXLE	FRONT AXLE	SERVICE	BRAKES	FRAME											
					MINIMUM STANDARD	STANDARD							CHARGE WEIGHT FOR NORMAL SERVICE	CHARGE WEIGHT FOR HEAVY SERVICE	NUMBER OF CYLINDERS	STROKES	DISPLACEMENT	COR. DISPLACEMENT	H.P. AT R.P.M.	GIVEN	MAIN BEARINGS	NUMBER OF CYLINDERS	STROKES
1 Sterling HBS130	164	185	32000	11000/8.25/20	10/00/20	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL		
2	HD8140	164	183	32000	11800/9.00/20	10/00/20	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
3	HW8160	164	183	32000	12800/10.00/20	11/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
4	HW8235	182	193	32000	15700/11.00/20	11/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
5	HW8109	182	193	32000	14200/10.00/20	11/00/24	Cum HB600	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
6	HW8239H	182	193	32000	16000/11.00/20	11/00/24	Cum HB600	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
7	HW8109H	170	189	45000	15300/11.00/20	12/00/24	Cum HB600	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
8	HC8195	182	193	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
9	HC8265	182	193	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
10	HC8265H	182	193	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
11	HC8265H	182	193	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
12	HC8297H	182	193	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
13	HC8297H	182	193	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
14	HC8309H	174	187	60000	16000/11.00/20	12/00/24	Wau 6 GMZA	0-4-1	Y Pu 4A43	Y Pu 4A43	F61H V	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL	
15	Triastell	156	237	28000	6465/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
16	(C) FX28-4(000)2F	134	224	28000	7897/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
17	(C) FX28-4(000)2F	156	224	28000	7897/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
18	(C) F2X3-7	156	224	28000	7897/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
19	(C) F2X3-8	156	224	28000	7897/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
20	(C) F2X40	156	224	28000	7897/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
21	(C) CX2X-2F	157	247	28000	6625/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
22	(C) CX2X-2F	130	244	28000	6625/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
23	(C) FX27 (000)2F	146	224	28000	7663/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
24	(C) FX27 (000)2F	146	224	28000	7663/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
25	(C) FX30	126	188	30000	8200/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
26	(C) FX30	156	224	30000	8200/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
27	(C) FX34	156	224	30000	8200/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
28	(C) FX34	156	224	30000	8200/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
29	(C) CX28	156	224	30000	7500/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
30	(C) CX29 (000)2F	125	192	28000	7863/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
31	(C) CX29 (000)2F	125	192	28000	7863/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
32	(C) CX30	125	192	30000	8400/7.50/20	8/25/20-10	Ford	8-3	8x3 1/2	2396/8.18/100-380/3.2-494.9	N Ford	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
33	Ward La Fr. DIT1	180	220	38500	10/00/20	11/00/20	Con T8427	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
34	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
35	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
36	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
37	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
38	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
39	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
40	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
41	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
42	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2	120/152-2600	...	4 Ford	SP	H 5-83-8-11 Ford	502	835	6	TX	82 1/2	8x2	8x1	46	TL
43	D2T14	180	220	38500	10/00/20	11/00/20	Wau 6 GMZA	6-1	8x4 1/2</														

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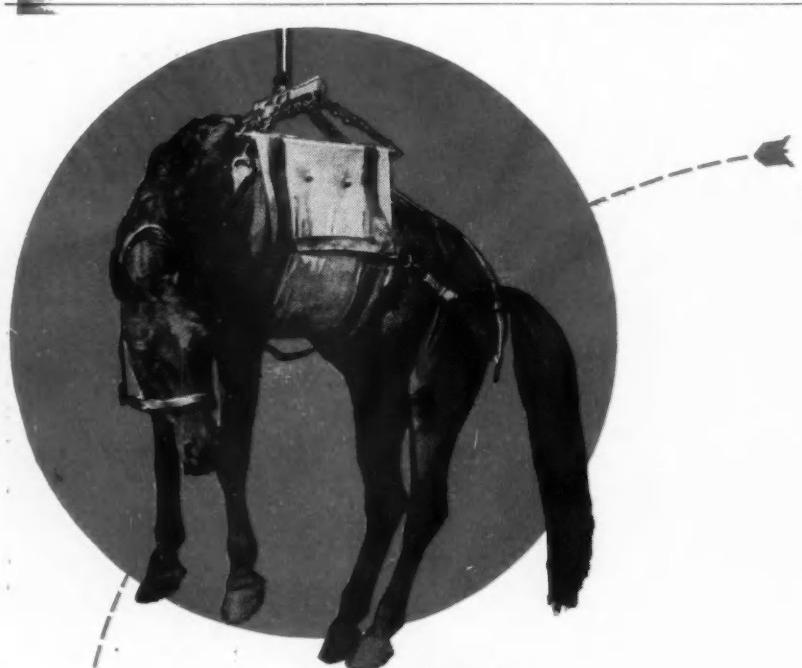
**FEDERAL MOTOR TRUCK COMPANY • Detroit 9, Michigan, U.S.A.**

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Here's one horse you can bet on every time, with complete assurance you're backing a winner. It's Thermoid's "Horse of a different color"—used to demonstrate Thermoid's Thermoidized Pre-Stretching Process—which checks fan belt failure before it starts. A Thermoidized Pre-Stretched Fan Belt was actually used to support the weight of a 1500 pound horse. Afterward, it was returned to service in the car from which it was borrowed and it worked perfectly at the original adjustment, showing no permanent stretch had occurred. For long life and completely dependable service under the most severe operation conditions, specify Thermoid when you're ordering fan belts. They're a sure bet—every time!



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**Thermoid Company • Trenton, N. J.**

WORK BENCHES, bulletin 701, contains information and illustrations describing construction, sizes, models and includes ordering instructions, for all types of benches and accessories. Write Standard Pressed Steel Co., Jenkintown, Pa.

BRAKE SHOE CHART, providing easy, quick identification of brake shoes for all passenger cars and popular Ford and Chevrolet trucks, can be obtained at cost from Wagner CoMax jobbers or Wagner Electric Corp., St. Louis, Mo.

DIESEL ENGINE DATA, bulletin 5296, containing complete specifications of the HRBB-600 and HRBBI-600 Cummins Diesels, can be obtained through local Cummins dealers or by writing the Cummins Engine Co., Inc., Columbus, Ind.

SHOP NOTES ON WELDING HEAT-TREATED STEEL FRAMES, a 2-page bulletin on welding techniques, gives suggestions for getting maximum service from heat-treated steel frames. It covers selection of weld wire, methods of welding and positioning of the weld. Write Parish Pressed Steel Co., Reading, Pa.

HARDWARE CATALOG, describes and lists a complete line of hardware available for truck bodies, trucks, trailers, buses, taxicabs and miscellaneous other uses. Practical applications are clearly illustrated and explained. Submit request to The Eberhard Mfg. Co., Cleveland, Ohio.

CERTIFIED JOB STUDY NO. 2, a 4-page bulletin describing in detail the handling methods which resulted in savings for one manufacturer, is available on request to Towmotor Corp., Cleveland, Ohio.

D-C WELDERS, booklet DB 26-100, describes the new 200-, 300-, and 400-amp 60-percent duty cycle selenium rectifier d-c welders. Included is engineering information on relative power costs, performance characteristics, construction details, dimensions and weights. Write Westinghouse Electric Corp., Pittsburgh, Pa.

AUTO-BAKE, a 4-page bulletin describing a mobile infra-red paint drying oven, presents 11 engineered advantages of this oven. It includes complete specifications for six models, which are available to service cars, trucks, trailers and buses. Write American Brake Shoe Co., Rochester, N. Y.

OIL FILTER AND REPLACEMENT CARTRIDGE CATALOG, describes in 16 pages and three colors the Pick magnetic oil filter. It features a cross referenced chart and an alphabetical list of vehicles showing interchangeability between original equipment and Pick cartridge replacements. Obtained on request to Pick Mfg. Co., West Bend, Wis.

STOP CORROSION WITH METALLIZING, a 4-page report, describes with illustrations numerous applications of corrosion protection by metallizing with zinc. Write for METCO News, Vol 4-12, Metallizing Engineering Co., Inc., Long Island City, N. Y.

(TURN TO PAGE 157, PLEASE)

# Fleetman's Library

Continued from page 154

HIGHWAY CAPACITY MANUAL, includes a detailed study of the effect of various roadway and traffic conditions on the flow of vehicles, on both rural and urban highways. It contains data on the capacities of rural 2-lane and multi-lane highways, and information relating to traffic flow at grade intersections, weaving sections, grade separations and ramps, effects of parking on city streets and the relation of hourly to annual average traffic volumes. Copies can be obtained for 65 cents from the Office of the Superintendent of Documents, Washington, D. C.

SIL-7 CATALOG, a technical data sheet, describes a combination cleaner, polish and coating which is neither a wax nor a glaze. Write Silicone Products Corp. of America, Cleveland, Ohio.

CUMMINS DIESELS, two bulletins containing drawings, photographs and specifications of the two V-type, 12-cylinder NVHS-1200 and NVH-1200, can be procured from local Cummins dealers or by writing Cummins Engine Co., Inc., Columbus, Ind.

POWER TOOLS, three circulars describing the Thor "Copper Line" tools, Model 35 sinker rock drill, and four mining tools, are available at Thor branch offices or by writing Independent Pneumatic Tool Co., Aurora, Ill.

RUBATEX INSULATION HARDBOARD, a 20-page technical manual, contains information concerning application of this expanded rubber compound for low temperature insulation. Write Rubatex Div., Great American Industries, Inc., Bedford, Va.

BEST'S SAFETY DIRECTORY for 1950-1951, covering the entire field of safety, fire protection and control, hygiene, first-aid and sanitation, is now available. Price is \$5.00—Alfred M. Best Co., 75 Fulton Street, New York 7.

ELECTRODE CATALOG, 16 pages of descriptions, data on applications, welding procedures, mechanical properties and specifications of electrodes, can be obtained by writing to Hobart Bros. Co., Troy, Ohio.

WELDING MACHINE CATALOG, contains 36 pages of descriptive text giving features operating data, specifications of AC and DC machines. Write Air Reduction Sales Co., N. Y. C.

CUTTING MAINTENANCE COSTS WITH ALUMINUM BRONZE ELECTRODES, describes in four pages the successful salvage and repair of many worn or broken parts. Write Ampco Metal, Inc., Milwaukee, Wis.

BRAKE DRUM LATHE CATALOG, contains answers to questions such as; "Can I afford a Brake Drum Lathe?" and "How much business can I expect?" and the selection of a drum lathe. Obtained upon

request from the Dixie Machine Tool, Cincinnati, Ohio.

THERE'S PROFIT IN LOW COST MOTOR REPAIRS, a 4-page folder describing modern techniques in engine reconditioning, available from The Sunnen Products Co., St. Louis, Mo.

UNIVERSAL LUBRICATING EQUIPMENT, an illustrated 20-page catalog just issued by Universal Lubricating Systems, Inc., Oakmont, Pa., lists and describes fittings, adaptors and lubricators developed by the company.

CUMMINS DIESELS—Sixty-eight high-speed diesels for automotive, industrial and marine applications, covering the entire power range from 50 to 550 hp, and three medium-speed diesels, are described in a new 36-page condensed catalog just issued by Cummins Engine Company, Inc., Columbus, Ind.

GENERAL PURPOSE HOISTS, two catalogs illustrated with operating pictures and illustrations of mechanical parts and assemblies for hoists ranging from 5 to 100 hp, can be procured from the American Hoist & Derrick Co., St. Paul, Minn.

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**CONNECTING ROD MICROMETER 350RL**  
Range (1½" to 2½") is right for most connecting rod journals. Graduations are specially located on underside of barrel for easy reading.

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Measures journals without removing crank-shaft from engine. Soon pays for itself in time saved. Range 0 to 5". This tool, recently introduced, is already acclaimed by hundreds of users.

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474 WELLINGTON AVE.  
CRANSTON 10, R. I.



## WILLYS Adds

Four-cyl. engine with 7.4 com

### For a Better Switch... Better Switch to ARROW



Check the features of the new Arrow Directional Signal Switch against those of any switch on the market, then switch to Arrow for safe, sure protection . . . for a better switch at a lower price.

**POSITIVE PROOF INDICATION.** One feature alone makes it worth the low cost. That's a tell-tale jewel light that tells you whether your signal lights are working—not just the switch. If one or more of your lights are out, or there is a break in the lamp circuit, the jewel light will indicate that the system is not functioning perfectly.

**FINGER-TIP CONTROL.** Adjustable handle can be moved in and out to provide finger-tip control regardless of the size of the steering wheel.

**EASE OF INSTALLATION.** Separate mounting bracket fits any size steering column merely by tightening a screw—a matter of seconds.

**BUILT-IN PROTECTION.** Built-in line fuse prevents short circuit caused by improper wiring from affecting other lights in your vehicle.

**DEPENDABILITY.** Tested for over 175,000 cycles.

**ATTRACTIVE, MODERN DESIGN.** Compact, good-looking.

The new Arrow switch is available for 6- or 12-volt systems, with standard or with stop-light-proof wiring-harness, with or without a flasher mounted in the switch case, and for a 2-light or 4-light hook-up. It can be used in combination with any Arrow Signal Lights or with any system now in use.

See the amazing new Arrow switch at your dealer's today.



ARROW SAFETY DEVICE COMPANY • MOUNT HOLLY, NEW JERSEY

WITH the introduction of its 1950 line, Willys-Overland Motors, Inc., offers two new engines of higher compression ratio and increased performance, one of which is a 4-cyl F-head.

The F-head engine is basically the same in most respects as the original 4-cyl engine, except for the introduction of the new head and its valve train. Cylinder blocks, rods, pistons, crankshaft and other parts remain interchangeable. The only change below the head comes in the use of a new camshaft to introduce a new set of cams for the intake valves but without changing the cycle of events. Exhaust valve cams remain unchanged.

Although the exhaust valves remain the same in basic design and in timing, the shift to relatively high compression ratio made it desirable to provide added protection through use of "free" type exhaust valve rotators and hard facing of exhaust valves.

The F-type cylinder head, features an asymmetric form of combustion chamber with suitable quench area. The spark plug is inclined from one side and located almost immediately over the exhaust valve. The intake valve has a diameter of 2-in. and is slightly inclined to the vertical axis. Having such large area at the intake port, it was feasible to reduce intake valve lift to 0.260 in. but still retain greatly increased breathing capacity. At the same time gas velocity is reduced from 311 to 274 ft per sec. The reduction in valve lift has a salutary effect on the intake valve train since it is possible to provide motion multiplication of 1.29 to 1 in the rocker arm linkage with relatively small light parts, thus producing a rigid and quiet action. Valve clearance is held to 0.018 in.

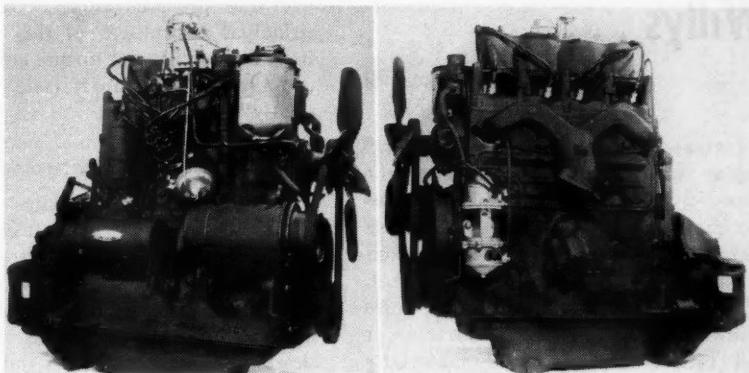
The F-head engine is offered with three optional compression ratios—for export, 6.9; standard, 7.4; for high altitude operation, 7.8. It will give satisfactory operation on regular grades of fuels of 75-octane rating. It is claimed that the F-head design is singularly free from detonation and is not carbon-conscious.

Compared with the 1-cylinder, L-head engine the F-head model gives increased torque and greatly increased horsepower over a wider range. The gain in fuel economy may be gaged

# F-Head Engine

pression ratio develops 72 hp

**LEFT.** The 1950 ½-tonner features restyled front end, new F-head, 4-cyl. engine. **ABOVE RIGHT,** Left side of engine showing accessibility of fuel pump and spark plugs. **ABOVE LEFT,** Right side of engine showing grouping of major accessories



## Condensed Specifications

Type	L-Head	F-Head	L-Head
No. Cyl.	4	4	6
Bore (in.)	3 1/8	3 1/8	3 1/8
Stroke (in.)	4 3/8	4 3/8	3 1/8
Displacement (cu in.)	134.2	134.2	160
Compression Ratio			
Standard	6.48	7.4	7.1
Export	...	6.9	...
High Alt.	...	7.8	...
Bhp (max)	63 @ 4000	72 @ 4000	75 @ 4000
Torque (lb ft) (Av.)	105 @ 2000	114 @ 2000	125 @ 2000
No. main bearings	3	3	4

from the fact that the L-head engine consumes about 0.575 lb/bhp hr while the F-head consumes only 0.49 lb/bhp hr. This is even more significant at around 85 per cent load where the F-head shows an increase of 25 per cent in fuel economy.

Willys two-wheel drive Station Wagons, Jeepster models, and panel delivery jobs have an improved Plana-dyne suspension. This incorporates a semi-elliptic, multiple-leaf spring mounted transversely at the front. Spring leaves have rubber inserts at their ends to control friction.

Willys offers the following restyled models for 1950:

Jeepster (standard model) with F-head, 4-cyl engine and without overdrive.

Jeepster Custom with 6-cyl engine, including radio, heater, and deluxe accessories as standard equipment. Station Wagons—models with 4-cyl F-head engine; and 6-cyl engine. One-ton, four-wheel drive truck with 4-cyl F-head engine.

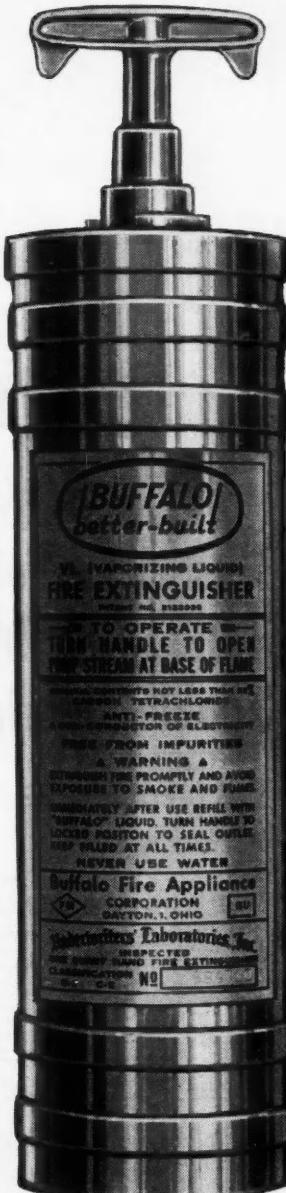
Half-tonner with two-wheel drive equipped with 4-cyl F-head engine.

The Half-tonner replaces the previous ¾-ton model which is discontinued as of 1950. It is important to note that the Universal Jeeps as well as the 4 x 463, four-wheel drive station wagon models are continued for the present without any change in styling or powerplants. These models, therefore, remain exactly the same as in 1949.

(TURN TO PAGE 160, PLEASE)

## The NEW BUFFALO better-built VL FIRE EXTINGUISHERS

with-  
**DRYEX**  
**THE AMAZING**  
**NEW DRYING**  
**AGENT!**



Every motor vehicle, every garage, repair shop and spray booth needs the protection of the Buffalo better-built VL Fire Extinguisher, now more dependable than ever. Each VL Extinguisher now contains DRYEX, the exclusive new drying agent that removes all traces of moisture, prevents corrosion and rust, insures continuous accuracy of performance and adds many years to the dependable life of the extinguisher.

Write us for full information on DRYEX and name of your nearest Buffalo distributor.

**BUFFALO FIRE APPLIANCE**  
CORPORATION  
DAYTON, OHIO

Established 1895

# Willys . . .

Continued from Page 159

Increased performance from the 6-cyl engine was attained by opening the bores  $\frac{1}{8}$  in. Since the stroke remains the same, all of the component parts remain unchanged except for pistons and rings. Compression ratio is 7.1 to 1.

This engine weighs only 21 lb more than the F-head model. Horsepower and torque are increased materially

over the previous model. One of the principal advantages of this engine is its exceptionally flat torque curve which drops to only 107 lb ft (min) at practically idling speeds.

## Chassis Features

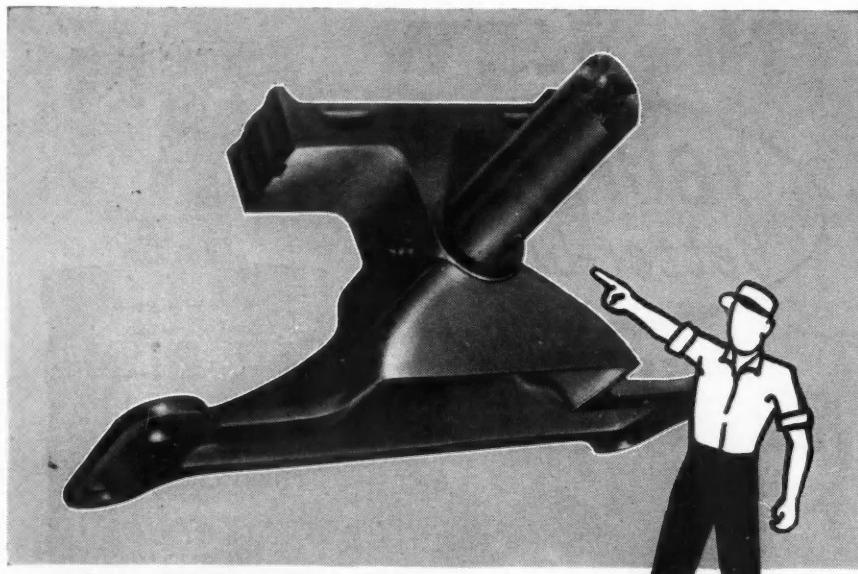
Intake manifold passages are cast within the head in "glove-fashion," the carburetor being mounted directly onto the head. This is said to give excellent mixture distribution since the difference in the length of passages from the shortest to the longest is quite small.

In addition, the intake passages are completely heated by means of the water jacketing and thus are effectively heated throughout the range of operation. In fact, Willys claims a definite gain in volumetric efficiency because of the elimination of hot spot heating.

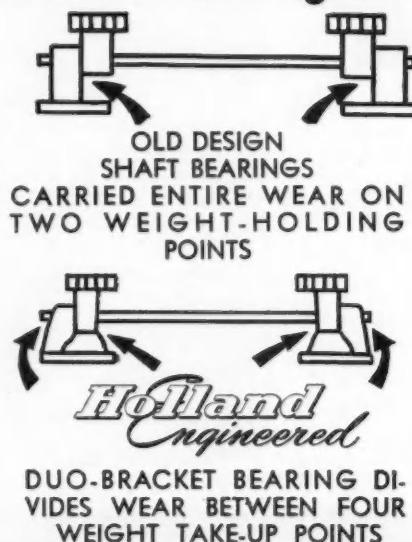
Pressure lubrication to the rocker arm mechanism is provided by oil lines leading directly from the camshaft bearings.

## Willys Improves Deep-Fording Jeeps

The new U. S. Army MC Deep Fording Jeep manufactured by Willys-Overland Motors, Inc., retains the basic characteristics of the present civilian Jeep with the addition of several developments and improvements which make it a much more efficient and durable vehicle than the water fording jeeps used in the last war. A waterproof electrical system developed by Electric Auto-Lite has been instrumental in making these improvements possible.



## This NEW Feature in Holland Fifth Wheels has a Double Bearing on Wear Reduction



This newly engineered Duo-Bracket rocker shaft bearing on Holland Fifth Wheels takes a good bit of the load off the two shaft bearings, and thereby reduces the wear that otherwise concentrated entirely on the bearings. It is another of the engineered, tested features that make it so desirable to standardize on Holland Fifth Wheels for uninterrupted service and long life. Contact your nearby Holland Hitch Distributor for details, or write to the company.



The 24-volt electrical system has a maximum rating of 25 amperes at 28 $\frac{1}{2}$  volts. This added power is needed for efficient operation of more powerful electrical equipment. Distributor and coil are combined in one hermetically sealed unit. The ignition harness is shielded and waterproofed. Headlamps, tail lamp, horns, wiring, switches, instruments, windshield wiper motor, wiring connections, generator, starter motor, regulator, and spark plugs are all waterproofed.

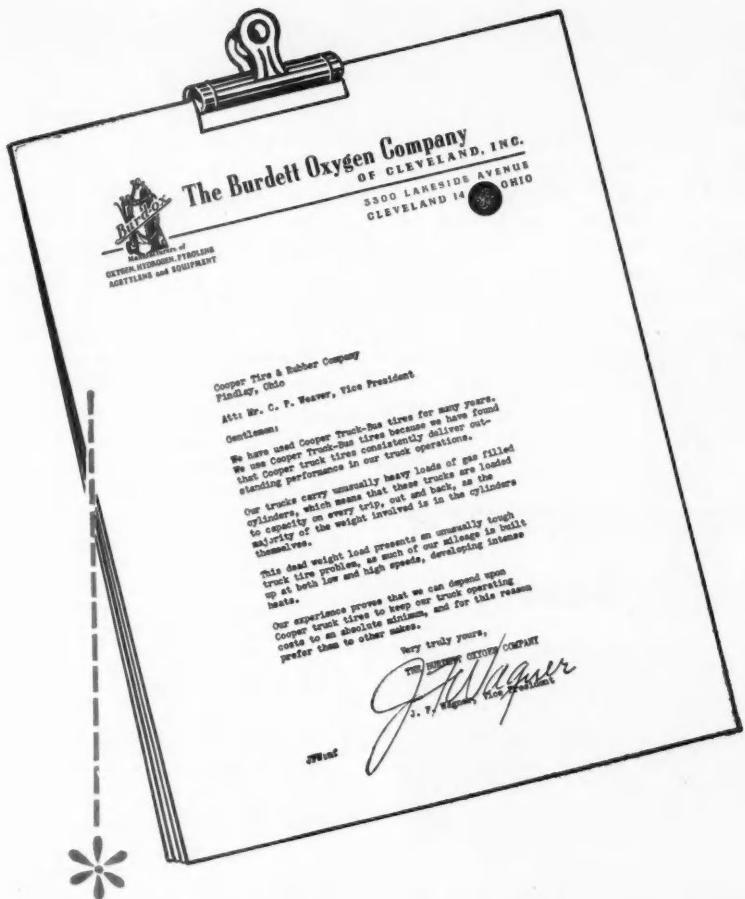
This equipment is designed to withstand the corrosive attack of frequent salt water immersion and to operate in extremes of temperature ranging from 70 deg below zero to 160 deg above zero F. Many new developments enable the units to withstand these conditions and operate continuously for 1000 hours—equivalent to 30,000 miles of ordinary passenger car driving—without maintenance.

Sealing water out of the engine was one of the major problems encountered in the underwater Jeep. Two valves are provided in the crankcase ventilation system. When the Jeep is driven on dry

(TURN TO PAGE 162, PLEASE)

**HOLLAND HITCH CO.**

HOLLAND,  
MICHIGAN



**profit by  
the  
experience  
of others**



"Our trucks carry unusually heavy loads of gas filled cylinders, which means that these trucks are loaded to capacity on every trip . . ."

"This dead weight presents an unusually tough truck tire problem, as much of our mileage is built up at both low

and high speeds, developing intense heats.

"Our experience proves that we can depend upon Cooper truck tires to keep our truck tire costs to an absolute minimum . . ."

**The Burdett Oxygen Company**  
Cleveland, Ohio



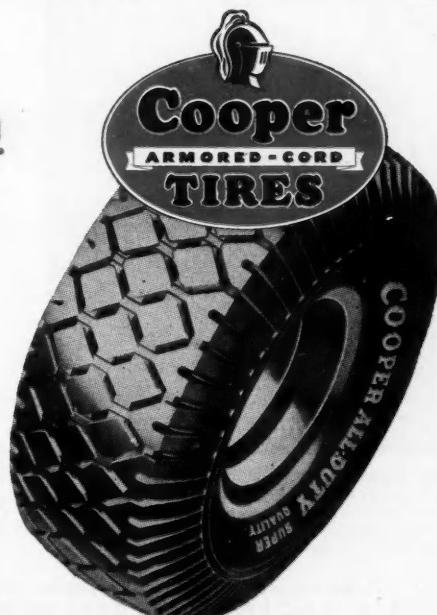
### **Costs Cut to a New Low by Cooper Distributed Stress Construction**

Check the records of Cooper truck tire users and you'll find case after case where costs have been cut to a new and timely low. And the reason is Cooper Distributed Stress Construction — the tire development that places extra strength directly under the tread, plus extra strength at the shoulders and sides.

The result is a uniformly stronger, more resilient Cooper truck tire that runs cooler, runs longer because there are no weak points to cause localized flexing and high friction heat. Meaning that more original miles and more recap miles can now be yours — and without extra cost. Your Cooper truck tire dealer has the facts — so call, call him today. Cooper Tire & Rubber Company, Factories at Findlay, Ohio.

**Users Say: Cooper**

**truck tires make payloads more profitable.**



# Willys . . .

Continued from Page 160

land, the valves are in the open position. This allows the engine to build up a vacuum in the crankcase, which is the normal method of venting. However, when the engine is driven under water, the valves are closed. This allows the engine to build up a pressure in the crankcase which aids in keeping water out. To further insure against

leakage newly designed crankshaft seals are installed both front and rear and a waterproofed oil bath air cleaner is provided.

Special venting is accomplished by connecting all vent lines to the main air intake pipe. The main units which have been vented are the carburetor float chamber, fuel tank, front and rear axles, brake master cylinder, distributor, windshield wipers, transmission and transfer case.

Another provision for deep fording is the shielded bellhousing which restricts the flow of water around the

clutch. In deep fording operation the clutch acts as a water brake, therefore, by restricting the water flow to the clutch, the pumping action of the clutch is reduced and the braking effect on the engine is lessened permitting higher engine and vehicle speeds under water.

Many units have also been rust-proofed to insure against faulty operation. The water pump shaft is made of stainless steel. A stainless steel clutch release bearing, prepacked for life with special grease, is furnished. On this model the clutch pressure plate is rust-proofed by cadmium and chrome plating. The driven disc is cadmium plated and furnished with special water resistant facings which will not stick to the flywheel or pressure plate after use in water.

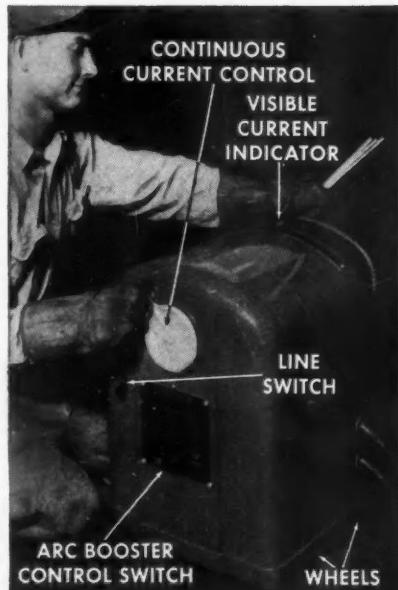
## Simplifies fleet maintenance to keep your costs down



Fabricates Skid Rail on tractor fifth wheel by speedily arc welding a steel strap to frame work with the "Fleetwelder."



Reinforces Trailer Body by adding steel sections and plate where heavy stresses are developed from severe highway service.



Makes Welding Easier. "Fleetwelder 200 AC" continuous current range 30 to 250 amps. Compact, portable, easy to move around the garage or shop. Built for easier, lower cost welding on all fleet maintenance work.

Send for free Bulletin 1301 on "Fleetwelder 200 AC."  
**THE LINCOLN ELECTRIC COMPANY**  
Dept. 321, Cleveland 1, Ohio

Sales Offices and Field Service Shops in All Principal Cities



**TRY THE "FLEETWELDER" YOURSELF.** Get full details in the free Bulletin 1301. See your local Lincoln Weldealer or write The Lincoln Electric Company, Cleveland 1, Ohio.

### ATA Spring Meet

The tentative program for the ATA Spring Meeting (Chicago, May 8-12) has been announced in part. Following is a list of subjects which will be covered by the battery of speakers:

**Council of Safety Supervisors**  
"Use and Value of Psychophysical Testing Devices."  
"Methods of Administering Tests."  
"How Telebinocular Tests Are Used."  
"Progress in the Harvard Safety Study."  
"The Tachograph as a Method of Driver Supervision."  
"Road Patrol"—A panel discussion of Organization and Use.

**Equipment and Maintenance Council**  
"Gross Weight and Weight-Power Relationship to Fuels and Time Economy."  
"A Method of Predicting the Performance of Commercial Motor Vehicles."  
"Possibilities in the Army Air-Cooled Engines in Civilian Truck Service."  
"Why Change Oil?"  
Round Table—"Road Failures—A Joint Problem of Operation and Maintenance."  
Round Table—"Tire Recapping Practices and Results."

**Terminal Operations Council**  
"Training Courses for Highway Freight Terminal Managers."  
"A Way to Use Fork-Lift Trucks on a Motor Carrier Freight Dock."  
"A Centralized Checking System for a Highway Freight Terminal."  
"Straight Trucks v. Short Semitrailers for City Delivery."  
Round Table—"How We Select and Train Terminal Branch Managers."  
Round Table—"What Percentage of Spare Trailers Above Scheduled Runs Are Necessary for Efficient Terminal Operations?"

Round Table—"Routine for Handling Freight Bills and Manifests."  
Round Table—"Procedures for Checking Accumulated Weight of a Trailer's Loading During Loading to Avoid Axle Overweights."



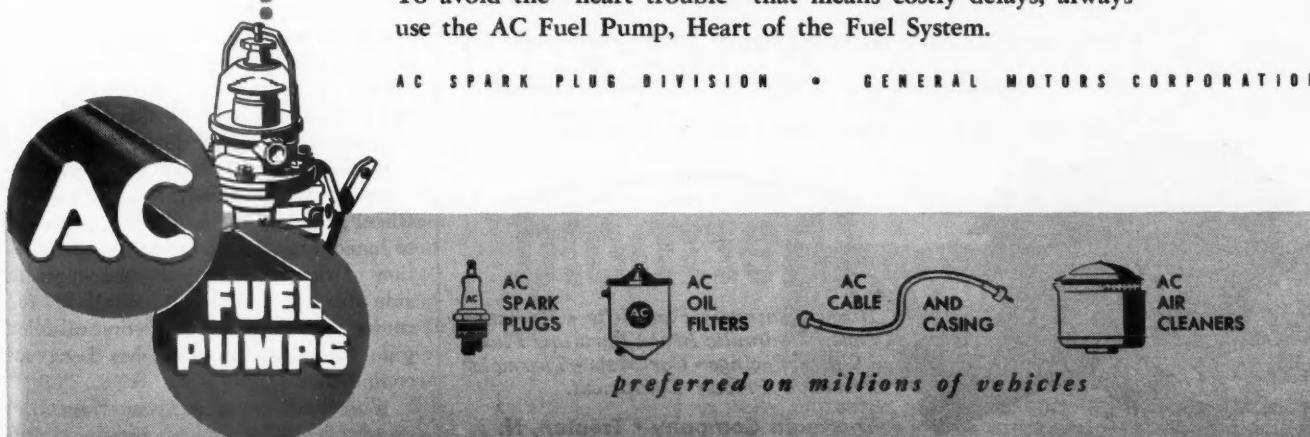
"Heart of the Fuel System" on 40,000,000 trucks, buses and passenger cars, the AC Fuel Pump has held its leadership for 23 years.

Fleet owners prize it for its amazing ability to keep them out of trouble. With periodic inspection . . . regular cleaning . . . replacement at regular intervals . . . the AC Fuel Pump helps to give their vehicles the reliability necessary to profitable operation.

That's why the AC Fuel Pump is a symbol of quality among fleet owners everywhere . . . quality in design . . . quality in manufacture.

To avoid the "heart trouble" that means costly delays, always use the AC Fuel Pump, Heart of the Fuel System.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION



*preferred on millions of vehicles*



## 91 HP Engine Po

Model 322 features new cab 130-i

Quick-detachable fenders, improved cab mounting, single-piece windshield characterizes new 1 1/2-ton model. Cab is 69 in. wide

Get  
This  
Straight!

... or get it curved. It's top-quality Thermoid Radiator Hose—made to original equipment specifications and proven to be better wherever the going's toughest. Because it resists deterioration due to heat, anti-freeze and chemicals, Thermoid Radiator Hose lasts far longer. Use it on all your equipment. Safeguard against restricted circulation caused by premature hose collapse. To reduce maintenance costs, specify Thermoid Radiator Hose when ordering from your regular supplier.



### Thermoid

Brake Linings • Fan Belts • Radiator Hose • Hydraulic Brake Parts and Fluid • Clutch Facings • Car Mats • Thermoid Precision Process Equipment.

Thermoid Company • Trenton, N. J.

DIAMOND T has added a new low-priced 1 1/2-ton Model 322 in the volume-production field, rated for 14,500 lb gross vehicle weight. Cab and engine improvements characterize this heavy-duty-type truck. The safety steel cab is the same as that pioneered for the recently introduced Models 420, 520 and 620 and includes the no-draft, full-vision features with one-piece curved windshield without center post. This cab has a four-point flexible mounting and the "quick detachable" fenders.

The improved QXLD engine, developed jointly by Diamond T and Hercules, has a bore and stroke of 3 7/16 in. x 4 1/4 in. and piston displacement of 236 cu in. It develops 91 hp. at 3200 rpm.

The engine has a heat-treated alloy iron block, 7 main bearings with 79 sq in. of tri-metal bearings, and precision-type rod bearings. It has the latest type of gear-driven and independently mounted water pump with positive oil seal. Improved cylinder head design with bosses for mounting accessories is retained and a larger radiator provides substantially increased cooling capacity.

New gears assure quieter front-end drive and thin-skirted aluminum pistons are closely fitted. Improvement of intake and exhaust valves has been combined with linger tappet guides and a new camshaft to aid silent valve action. A larger and heavier flywheel, with a larger bell housing and increased clutch ventilation, combines with the vibration damper to radically reduce torsional vibration. The flywheel gear has 112 teeth, instead of 97, to encourage easier starting. Relocation of the fuel pump on the opposite side from the exhaust manifold for cooler operation and of the oil-filler pipe for easier servicing has been accomplished.

Wheelbase options run from the standard 130 in. to a maximum of 166

# ne Powers 14,500 lb. DIAMOND T

cab 130-in. wb., 236-cu in. Hercules engine

in. with standard cab-to-axle dimensions and full length frames for bodies up to 14 ft. A special 190-in. wheelbase with one-piece side rails for 48-passenger school buses has been added to the line.

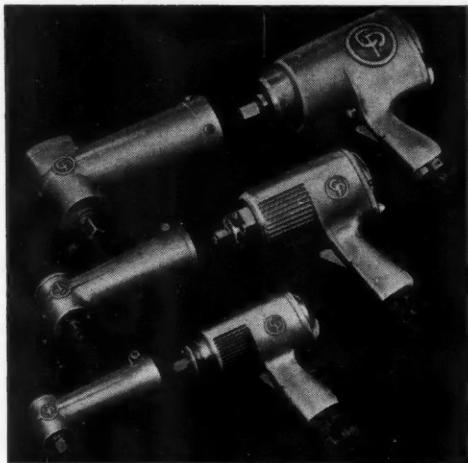
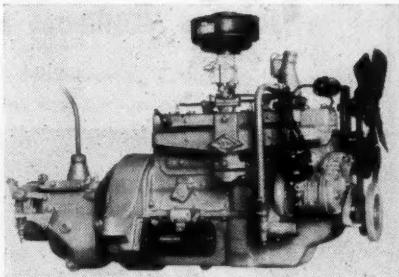
The cab combines design and construction features with appearance, durability and driver comfort facilities of wide extent. It has full Marshall springs in the driver's seat and stainless steel door handles, window and instrument panel trim. Cab width has been increased 10 in. to a full 69 in. with double-wall construction of heavy gage steel. It is also being offered in a deluxe version which includes a divided seat and other features. In addition to the single piece windshield with self-adjusting electric wipers, there are two large safety plate glass windows in the rear panel.

A new mounting system floats cab and sheet metal as a single rigid unit entirely isolated from the effects of frame distortion. Cab, cowl, fenders, hood and radiator support are locked together into a truss-type structure that maintains accurate alignment with no relative movement between any of the parts. This unit is carried by a rubber and spring-mounted rocker arm at the rear of the cab and a similar flexible mounting under the radiator support channel, with a lighter intermediate mounting at each side of the frame. These supporting points form a diamond pattern and are located where there is negligible relative movement regardless of frame twisting, so that cab and sheet metal ride undistorted and unaffected by maximum wheel and axle displacements.

The front axle is of the drop-forged, I-beam type with wide track and the hypoid bevel rear axle is full floating with double Timken wheel bearings directly above the tires. Axle shafts can be removed without taking off the wheels. They are pinion straddle mounted on three rows of bearings. All gears and shafts are of alloy steel and the one-piece forged housing is of heat-treated steel.

The 1350 series 2-speed axle is continued as an option without a change in rating when it is supplied. Where 8.25 x 20 tires are specified heavier front and rear springs and a B-K (TURN TO PAGE 168, PLEASE)

*Hercules engine has 3 7/16 in. bore, 4 1/4 in. stroke. Larger flywheel reduces torsional vibration. Fuel pump has been relocated opposite the exhaust*



for  
any  
nut

on car or truck



CP-730, CP-750 and CP-770 wrenches are available in handy lightweight, metal carrying cases with set of sockets and angle head attachment.

To handle any bolt, screw or nut—to 1 1/4" bolt size—there's just the right CP Air Impact Wrench—in the world's *only complete line*—with angle heads, for awkward-spot jobs, available for every size.

**Controllable impact**—the twist of a knob regulates power—insures running on each nut exactly to proper tightness.

**Capacities:** CP-730 to 7/16" bolt size; CP-750 to 5/8" bolt size; CP-770 to 1" bolt size; CP-365 to 1 1/4" bolt size.

Write for full information.



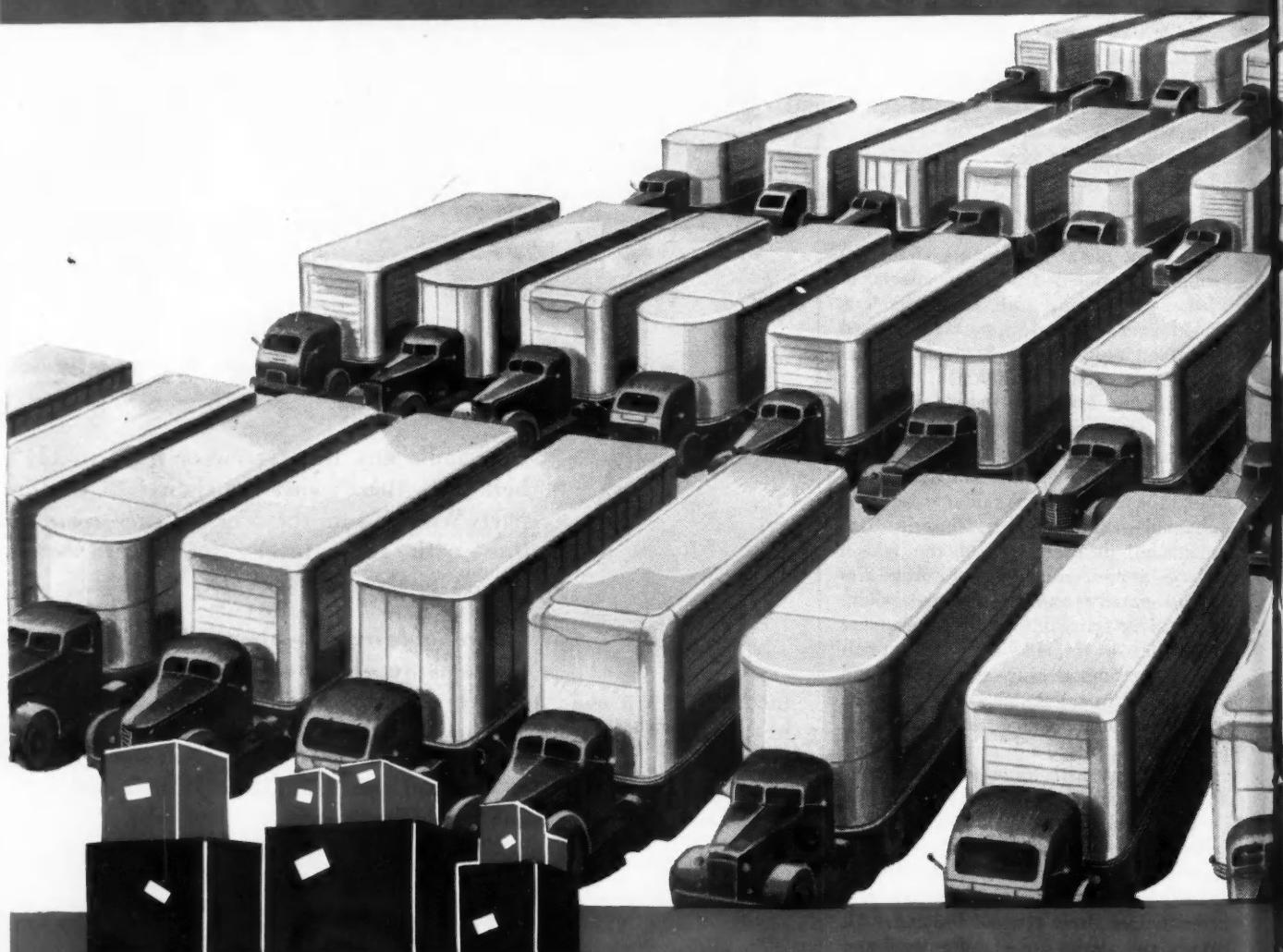
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AUTOMOTIVE SERVICE EQUIPMENT • FENDER IRONS • ELECTRIC TOOLS  
AIR IMPACT WRENCHES • AIR COMPRESSORS • PNEU-DRAULIC PUMPS

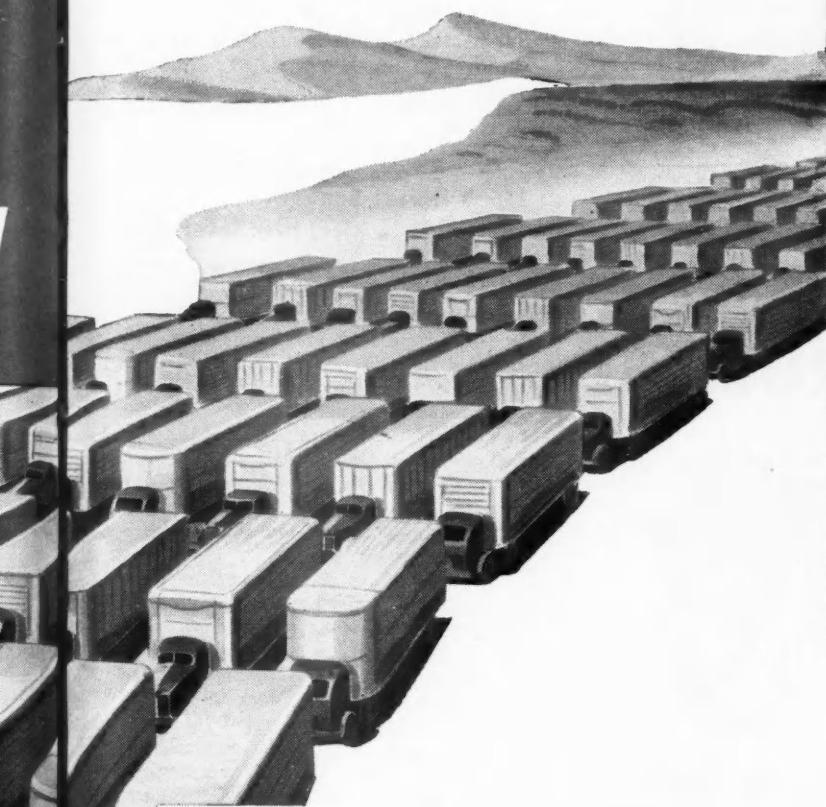
# "Million-Milers" of Alcoa

**PICKED BY THE FLEETS  
WHO OUGHT TO KNOW!**



**EXTRA PAYLOAD IS THE PAYOFF!**

# Aluminum...



Time after time, the fleets that try aluminum trailers *keep on buying aluminum units*. That's in the record. Here are some of the good, sound *money* reasons why they do it.

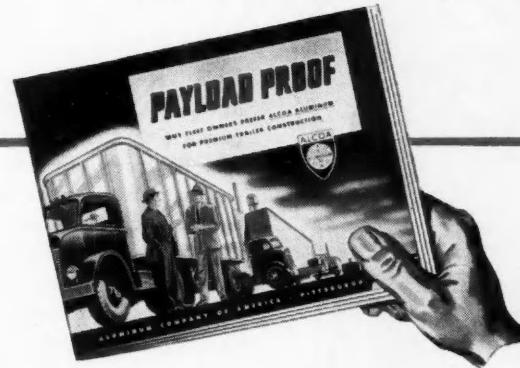
Alcoa Aluminum construction eliminates needless dead weight. Steps up payload capacity. Reduces costs for fuel and tires. Because aluminum resists corrosion, many a strong, massively-built aluminum trailer has rolled up a million miles of service with little maintenance . . . not even paint. When accidents happen, you can repair aluminum trailers quickly, at low cost, right in your own shops.

Ask your trailer builder for details on all-aluminum equipment to boost the earning power of your fleet!

For local source of supply on ALCOA Products, look under ALUMINUM in your Classified Telephone Directory.

## FLEETS OPERATING TRAILERS OF ALCOA ALUMINUM INCLUDE:

Adam Scheidt Brewing Company  
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Associated Transport  
Baltimore Transfer Company  
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Harry A. Blades  
Central Motor Lines  
Consolidated Freightways, Inc.  
Eckert Freight Lines  
Hayes Freight Lines  
The Kroger Corporation  
Pacific Intermountain Express  
Philadelphia-Pittsburgh Carriers  
Reading Transportation Company  
Red Star Express Lines  
St. Johnsbury Trucking Company  
Santa Fe Trail Transportation Co.



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Its 36 pages are filled with useful information, fully illustrated, to help you size up the advantages of Alcoa Aluminum for your equipment. Performance records, weights and dimensions of aluminum trailers, old and new. Send for your free copy of "PAYLOAD PROOF" today. ALUMINUM COMPANY OF AMERICA, 1860D Gulf Building, Pittsburgh 19, Pennsylvania.

# ALCOA FIRST IN ALUMINUM

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS  
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS



# Diamond T

Continued from Page 165

booster are supplied. The lighter R-755 rear axle is also available optionally for 20 in. dual Budd wheels, single rear tires on spoke wheels and for 17-in. tires. Budd wheels can also be had with the 1350 axle but not with the standard R-1000 axle. For the present, 17-in. tires with axle ratios of 5.17 and 5.57 are available only on the optional R-755 axle.

Optional transmissions of synchromesh design are available for the new 322 truck in both 3-speed and 4-speed types. Ample capacity and quieter operation mark the 3-speed transmission while the 4-speed T-98 is also synchromesh and oversize as well.

Brakes are of the Wagner FR design and Bendix Hydrovac booster is available at extra cost. The hand brake is a contracting band mounted at the rear of the transmission. The flexibly mounted single plate clutch is 11 in. in diameter. A two-piece propeller shaft is employed in all wheelbases.

with three Spicer needle-bearing universal joints and rubber-mounted double Timken driveshaft bearing.

Frames have pressed steel side rails and alligator-jaw cross members. Springs are semi-elliptic front and rear and all leaves are of alloy steel. Front springs are 2-inches wide and 42-inches long while rear spring are 2½-inches wide and 56½-inches long. A specially designed Diamond T re-circulating heater or a de luxe fresh air heating and ventilating system is available optionally on the new truck.

## THIS IS THE ONE FOR YOUR BIG TRUCKS!



2 qt. size (above) for large trucks; 1 gal. size for tank trucks, garages, terminals.

**BIG TRUCKS**, bought at big cost, need fire extinguishers that can do a big job. Highway authorities recommend larger extinguishers for today's greater hazards.

The 2 quart and 1 gallon PYRENE\* Vaporizing Liquid Extinguishers have the fire-smothering power it takes to protect your heavy investment.

They'll handle almost any kind of fire, including flammable liquids. They're safe to use on electrical fires.

You can put them to work in seconds, because they operate on stored air pressure. Their combination nozzle is instantly adjustable for solid stream, fan-shaped spray, or temporary shut-off. Each one is equipped with pressure gauge and sight glass, to tell you at a glance that pressure and fluid are ready for action.

Both sizes are available with either wall or running-board bracket, and with or without built-in hand pump to renew air pressure. Both sizes give you superb fire protection, and the peace of mind that comes with knowing you have it.

Call in your PYRENE jobber today for a recheck of your extinguisher requirements.

\*T. M. Reg. U. S. Pat. Off.

### PYRENE MANUFACTURING COMPANY

589 Belmont Avenue

Affiliated with C-O-Two Fire Equipment Co.



### Mack Diesel School Hits High in Mechanic Interest

Free diesel training courses offered by Mack Trucks, Inc., have attracted thousands of mechanics, drivers and specialists from the New York area. More than 4000 attended the first session held in Manhattan Center on February 27, and few if any are missing from the ranks now that the program is heading into its sixth week. Enthusiastic students, anticipating diplomas at the end of the 10-week course, are keeping the experts busy—are accepting and absorbing all the technical information that they can provide.

This is but one of a number of such schools being offered by Mack. Boston and Albany courses have already been completed, and similar projects are planned for other cities over the U. S. When the program is completed, Mack expects to have met hundreds of thousands of truckmen, equipping them with practical, authentic information on diesel operation.

The course is arranged with two-hour lecture periods, during which time engineers and specialists discuss assigned phases of diesel operation and maintenance. Usually these men are from the Mack organization in the area. After the lecture, the group is asked to prepare questions which are in turn thrown at the prearranged panel of Mack engineers. At this time queries are answered and hazy points or more difficult problems are thrashed out. The men love it.

It is interesting to note that mimeographed copies of each lecture are distributed each week. A recording is made of all questions and the ensuing discussion, and at the end of the course all students receive complete transcript of all the material that has been presented. This is in addition to manuals, maintenance data and other material that will be of use to the mechanic.

Following is a brief outline of the course, week by week:

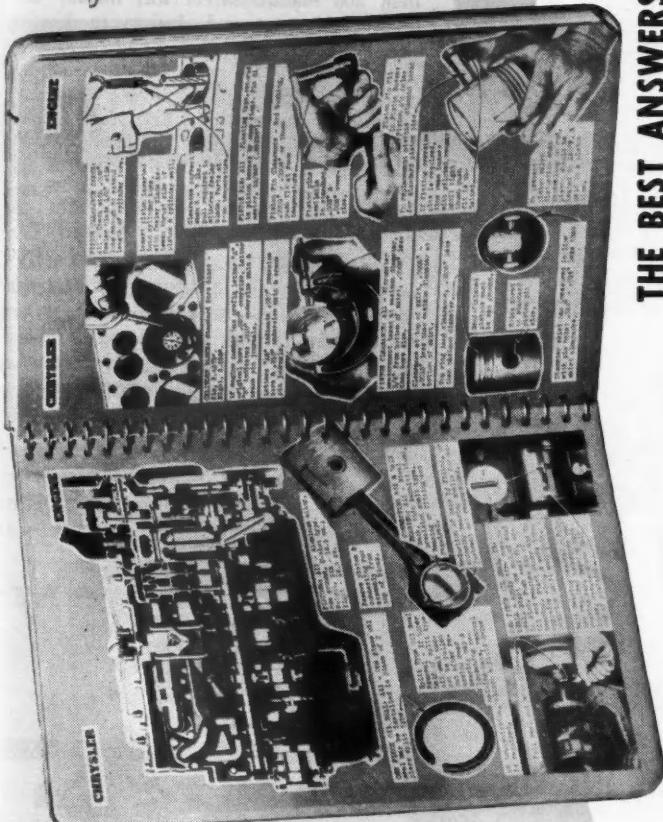
1. History of the Diesel and its Economics
2. How the Mack Diesel Works
3. The Injection Nozzle and Pump
4. Timing Injection
5. Diesel Fuel—Filtering
6. Lubrication and Lube Oils
7. Trouble Shooting-Trouble Analysis
8. Unit Overhaul
9. Maintenance Practices
10. Driving Practices
- Logical Diesel Users



# The new Thompson

REPAIR & TUNE-UP MANUALS...

GET THEM FROM YOUR TP DISTRIBUTOR



## THE BEST ANSWERS TO 1001 ENGINE AND CHASSIS JOBS!

**A** THOUSAND PAGES of instructions, illustrations, and diagrams make these the two greatest SHOW-HOW BOOKS ever compiled for automotive mechanics. Each volume shows best procedures for doing jobs on engine, chassis, newest type transmissions, brakes, wheel suspension assemblies, wheel aligning.

**VOLUME I**—for Passenger Cars.

**VOLUME II**—for Trucks, Buses, Tractors, Diesels and Industrial Engines.

**SPIRAL BOUND** between sturdy covers, the books lie flat and stay open on bench or car fender for handy, on-the-job reference.

**LATEST EDITION** now combined in two compact volumes. Covering models for the past seven years!

THE ONE-STOP  
STORE  
FOR ALL THE PARTS  
YOU NEED!



CLEVELAND • DETROIT • LOS ANGELES • ST. CATHARINES, ONT.

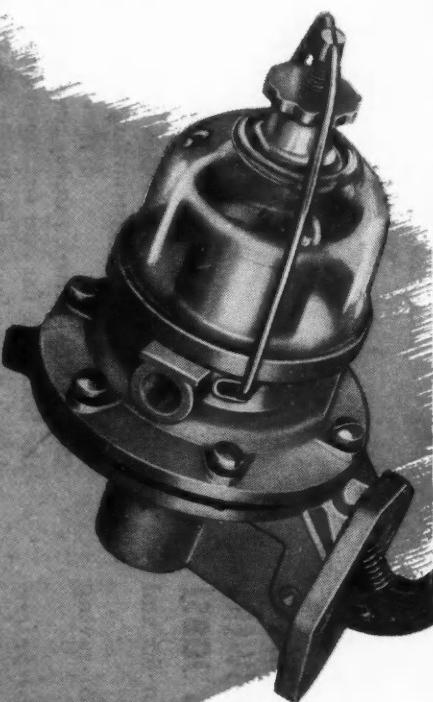
Your Thompson Products Distributor

# Going Over BIG...



## COMPLETE LINE OF Fuel Pumps and KITS

Give You  
Something  
to Talk  
About



—the strong, selling story  
of the exclusive, long-  
wearing, trouble-free  
NYLO-PRENE® diaphragm.

There's an exact-dimensional, perfect-fitting replacement — for all popular makes of cars — in the *complete line* of P. & D. Fuel Pumps and Kits.



IN ONE WORD  
dePenDable



MANUFACTURING COMPANY, INC.

LONG ISLAND CITY 5, N.Y.

### INDUSTRY BRIEFS

Regional sales meetings held by American Brakebok Division of American Brake Shoe Co. have announced a new dealer merchandising program.

It is based on the theme, "Spend a Minute—Save a Life." It is aimed at helping American Brakebok dealers point out to the motoring public the importance of safe brakes. Complete sales and promotion materials have been prepared and will be in the jobbers' hands immediately.

Net sales of the Minnesota Mining & Mfg. Co. for 1949 reached an all-time high, according to the firm's annual report. The figure was \$114,925,274, an increase of more than six million over the previous record of \$108,246,410 set in 1948. Net income after taxes amounted to \$15,398,176, up about two million over last year's profit of \$13,234,756.

A new truck tire designed to deliver substantially greater mileage and at the same time give smoother wear has been announced by Goodyear Tire & Rubber Co.

Termed the New Hi-Miler Rib, the tire features a new tread which has been made flatter and with more rubber. The carcass is also of tougher compounds, believed considerably more resistant to heat and high speeds. A new continuous rib design has proved itself during a long series of road tests.

The doors of Mechanics Building, Boston, will be thrown open April 25 for the biggest Automotive Parts and Equipment Show ever held in New England. More than 300 manufacturers will display the latest equipment and devices in booths which total 475 in number. The four-day show is the focal point for welding together factory representatives, jobbers, automotive associations, Booster Clubs, and all other members of the industry in this large undertaking which has for its central theme the "Get It From Your Jobber" idea.

Setting a new all-time high of 478,000 in attendance, the 42nd annual Chicago Automobile Show, held from Feb. 18 to 26, inclusive, at the International Amphitheater, proved an epoch-making event. Sales at the show and in dealer establishments, during its nine-day run were estimated at 10,000 cars and trucks.



# WE'RE DELIVERING THEM NOW! TRUEHAUF'S NEW CORRUGATED\*

ALL STEEL "Unit-Built" VAN BODIES



This 12-ft. straight-frame  
Corrugated Van Body—com-  
plete with tailgate, painted  
and mounted on your chas-  
sis—delivers for

**\$614<sup>00</sup>**

(Freight and  
taxes extra)

\*Complete-Mounted and Painted- AS LOW AS \$614<sup>00</sup>  
FREIGHT & TAXES EXTRA

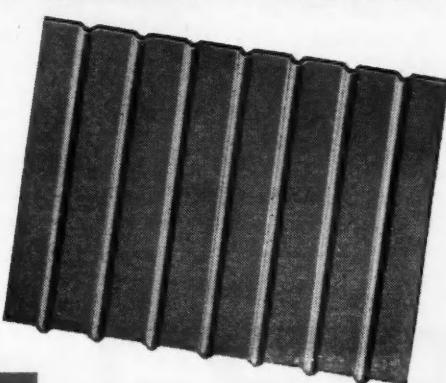
Now Fruehauf brings you its handsome, brand new Corrugated Van Bodies—with the same extra-sturdy, rugged-built construction as Fruehauf's famous corrugated-steel Trailers! All steel and "Unit-Built," they're welded from stem to stern into one single, rigid, trouble-free unit—with nothing to work loose, warp, splinter or rattle.

Fruehauf's New Corrugated Van Bodies are available in 12-14-16 ft. lengths—in popular straight-frame or wheelhousing models. And at extremely popular prices!

World's Largest Builders of Truck-Trailers  
**TRUEHAUF TRAILER COMPANY**  
DETROIT 32 LOS ANGELES 58  
In Canada: Weston, Ont.

**Fruehauf's famous Corrugated  
Construction for GREATER STRENGTH!**

Every corrugated channel  
(spaced 8" apart) becomes  
a load-supporting member.  
Lighter-yet-stronger cor-  
rugated construction con-  
tributes to long, trouble-free  
life of Fruehauf's rugged  
"Unit-Built" Van Bodies.



Ready for the road  
in a matter of hours

**TRUEHAUF**  
*Truck Bodies*

Custom Quality at  
production line prices

# Federal Reorganization Plans May Affect Highway Transportation

Two of the 21 plans to reorganize the Federal Government, submitted to Congress recently by President Truman, will have a far-reaching effect on highway transportation if they are allowed to become law.

Plan No. 7 reorganizes the Interstate Commerce Commission to the extent of transferring all executive and administrative functions of the ICC to the Chairman

of that Commission, and places the selection of the chairman in the hands of the President. The present regulatory and quasi-judicial functions of the ICC, however, would be left undisturbed at this time. The result would be to have ICC much more responsive to changes in Administration policy.

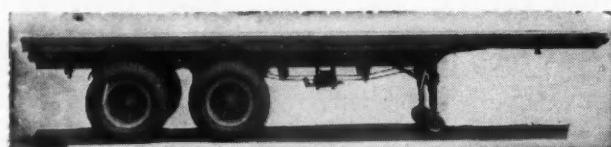
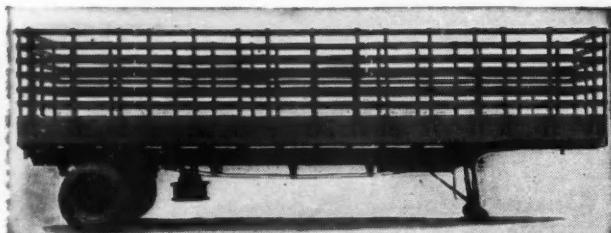
Another proposal (Reorganization Plan No. 21 of 1950), in connection with the

abolition of the Maritime Commission and the transfer of its functions to the Department of Commerce, would set up a new office titled the "Under Secretary of Commerce for Transportation."

It is now becoming apparent that the eventual plan of the Administration is to centralize all Government transportation agencies in the Department of Commerce. Another "Hoover" Commission proposal which the President is expected to submit at some later date is one that will transfer to Commerce the motor vehicle safety regulatory functions of the ICC.

Under the terms of the Reorganization Act of 1949 these plans now submitted by the President will become law unless they are "vetoed" by a majority vote of either branch of Congress within 60 days.

## TEC TRAILERS

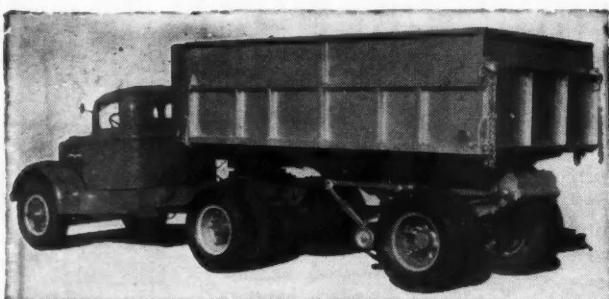


### VANS STAKES FLATS

Single and  
Tandem Axle.  
All Sizes and  
Models

## DUMP UNITS

For Bulk Hauling  
of Coal, Sand,  
Gravel and  
Other Materials



TEC TRAILERS are designed to haul maximum pay-load with minimum dead weight, and provide long life with low maintenance cost. Prompt delivery can be made on standard models.



Some Distributor Territory Available

TRUCK ENGINEERING CORP.  
CLEVELAND 2, OHIO

## RANDOLPH'S RIDDLES

### Busman's Problem

What is the number of buses that will stop at a given corner in an hour, if five buses, running on the same schedule, stop there every 12 minutes?

Answer on Page 175

### Automotive Double Talk

What part of a truck has the name of a

1. Woman's shoe
2. Nest of eggs
3. Artillery unit
4. Movie enthusiast
5. Tunnel
6. State head
7. Fountainhead
8. Railroad station
9. Old horse
10. Breeding horse

Answer on Page 175

### Increased Tanker Capacity



Three groups of engineers from White, Standard Oil and Pennsylvania Furnace & Iron developed this truck. With the short wheelbase White 3000, the over-all length was decreased by 2½ ft and the carrying capacity was increased by 1000 gal. Overhang from the rear wheels was also reduced by three ft. Featured is new location of hose and reel on the side to speed delivery.

## NTTC Brief Filed with ICC

National Tank Truck Carriers, Inc., has filed a brief before the Interstate Commerce Commission in the railroad rate case on petroleum products in the Southeast (I&S 5710).

NTTC's argument that the suspended rates should be disapproved was based on two contentions: (1) "The suspended rates, irrespective of cost factors, are contrary to the national transportation policy," and (2) "The carriers have not established that the suspended rates are compensatory within the meaning of the act."

The brief calls the attention of the Commission to several previous cases before the ICC and the Supreme Court in which the principles of preserving the inherent advantages of each mode of transportation, equal regulation of all modes, and prevention of unfair and destructive competitive practices, were affirmed as being necessary to the proper administration of the national transportation policy.

## West Coast M.E.W.A. Meet

Wholesalers from 11 Western states participating in the Pacific Automotive Show at San Francisco recently attended in force the M.E.W.A. Western States Business Conference on Feb. 15. Also a large number of manufacturers were present, bringing the total attendance to approximately 400.

## 41 Billion Needed for Roads

The total cost of correcting present deficiencies on the highways, roads and streets of the nation is estimated at \$41,144,630,000, according to the Joint Committee on the Economic Report of the U. S. Congress. The committee's report entitled "Highways in the Nation's Economy" is based on responses to inquiries addressed last July by Sen. Joseph C. O'Mahoney, Chairman of the committee, to the governors and highway authorities of all of the states, and was assembled by the committee staff in cooperation with the Bureau of Public Roads.

Of the total \$41 billion, the largest single amount, \$23,044,630,320, is estimated as needed for the state highway systems and

their urban extensions, with \$10,400,000,000 reported as needed on local rural roads, and \$7,700,000,000 estimated as needed for city and village streets.

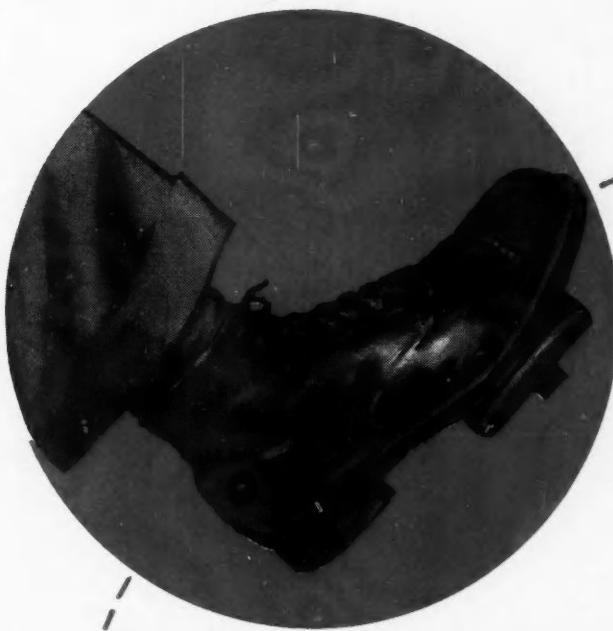
## Automotive Double Talk ANSWERS

- |            |                          |
|------------|--------------------------|
| 1. Pump    | 6. Governor              |
| 2. Clutch  | 7. Spring                |
| 3. Battery | 8. Terminal<br>(battery) |
| 4. Fan     | 9. Plug                  |
| 5. Tube    | 10. Stud                 |

## Answer to "Busman's Problem"

### 21 Buses

EXPLANATION: The buses are running on the same schedule, so they are evenly spaced with regard to time. The interval between each of five buses in a 12-minute period is, therefore, 3 minutes (BUS interval BUS interval BUS interval BUS interval BUS). There are 20 such intervals in an hour, and, since they all lie between buses, there must be 21 buses.



## Put Your Foot Down on Costs

Thermoid Heavy Duty Brake Blocks provide maximum "safe stopping" at minimum cost per mile.

They stand up under high operating temperatures. Even when worn thin, they give full brake action. They won't score or wear brake drums.

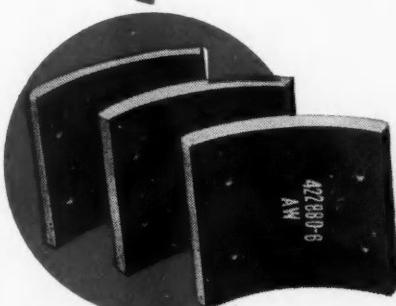
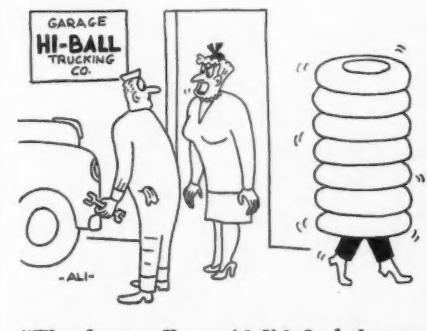
Thermoid Heavy Duty Brake Blocks work smoothly, quietly, reliably. Wet or slushy weather won't affect their efficiency.

More and more leading fleets are relying on Thermoid Heavy Duty Brake Blocks for sure, safe stopping that ups fleet efficiency. Ask your Thermoid Distributor or Fleet Specialist to show you how you too can reduce operating costs.

# Thermoid

Brake Linings • Fan Belts • Radiator Hose  
• Hydraulic Brake Parts and Fluid • Car  
Mats • Clutch Facings • Thermoid Pre-  
cision Process Equipment

Thermoid Company • Trenton, N. J.



# C.O.D. System Nets Quick Cash to



Typical vehicles of M. R. & R. Trucking Co.'s fleet

Bank accounts at various warehouse points and two forms expedite handling of c.o.d.'s

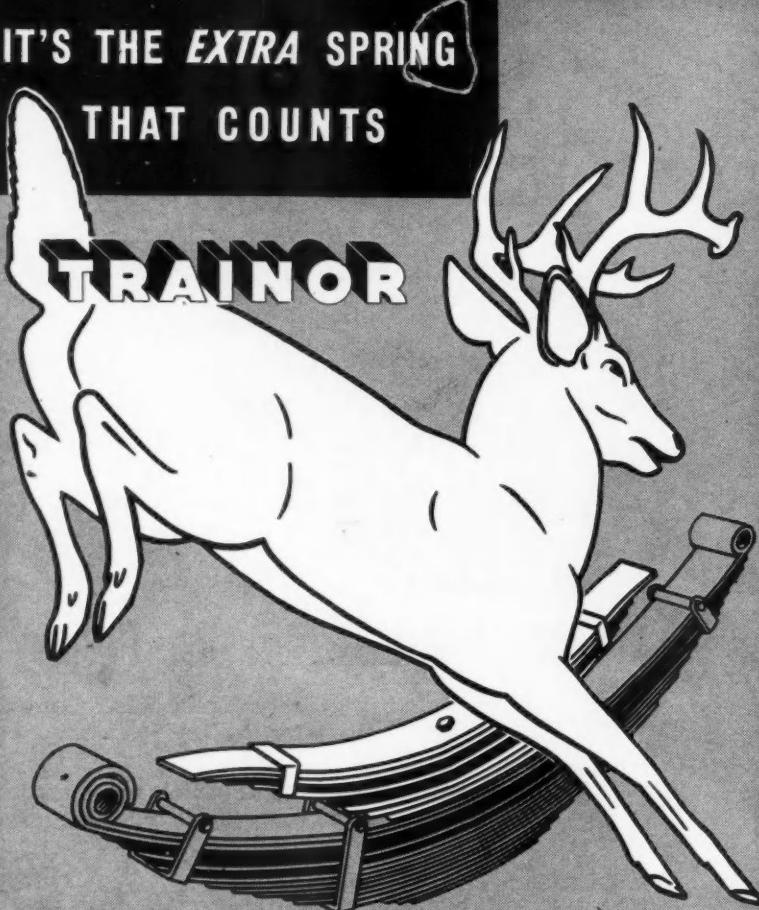
A FAST, SIMPLE method of handling cash on delivery accounts has been installed by the MR & R Trucking Co., according to Carl E. Bjorkland, vice-president of the company and manager of the interchange sub-station, Panama City, Florida.

MR & R is a comparatively new line servicing all points in West Florida to Jacksonville. Headquarters are in Crestview, Florida, with interchange sub-stations in Panama City and Pensacola. The line connects with other trucking lines throughout the southern states, with a north to south movement from Memphis, Tenn., to the Pensacola station.

## Bank at Warehouse Points

THE streamlined cash-on-delivery system used by MR & R is based on establishing checking accounts at local banks in every town in which the company has a warehouse; namely, Panama City, Crestview, Pensacola, Tallahassee and Jacksonville. Agents at these warehouses have authority to draw on their c. o. d. accounts for payment to shipper just as soon as the merchandise has been delivered.

Collections for merchandise delivered during the course of one day are usually held over and deposited early the following morning. Checks to the shippers are then made out immediately and mailed before noon.



The deer is known for its spring agility even when travelling over the roughest terrain. TRAINOR Helper Springs are known for adding spring ability to all trucks travelling rough highways. Engineered for simple installation, TRAINOR

Helper Springs increase payload capacity, reduce road shock and prove more economical in cost per mile. TRAINOR Helper Springs and Build-Up Kits are available at leading automotive wholesalers everywhere.

### BRANCHES

INDIANAPOLIS SPRING CORP.  
830 W. Washington St., Indianapolis, Ind.  
CINCINNATI TRAINOR SPRING CO.  
2428 Spring Grove Ave., Cincinnati, Ohio  
COLUMBUS TRAINOR SPRING CO.  
Columbus, Ohio, 339 Cleveland Ave.

TRAINOR NATIONAL  
SPRING COMPANY  
NEWCASTLE, INDIANA



"I was formerly loading superintendent for the Gotham Bus Company."

# **Small Shippers**

**By Ted Bryan**

This sends remittance on the way approximately 24 hours after collection. Such speed is a boon to small shippers with limited capital.

## Connecting Line Gets Card

WHEN the agent makes out a c. o. d. check to the shipper he also fills out a form on a government postal card to the connecting line which delivered the shipment to his line. This card contains all pertinent information about the shipment; delivery time, date, and to whom the payment was made.

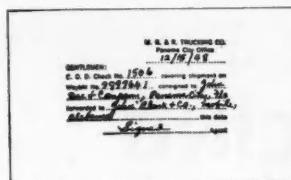
This system does away with many tracers and the general mix-up that can happen when more than one connecting lines have handled shipment.

Agreements with connecting lines provide for payment of accounts to them on a weekly or monthly prorate basis.

Although the MR & R c. o. d. system rates less than 2 cents per shipment over other c. o. d. systems in use, it is still considered inexpensive by MR & R trucking officials. In many instances, they point out, it does not cost that much, as c. o. d. shipments often come in groups from the same shipper and can be covered with one transmittal.

After a trial over a period of years, the officials are quite satisfied with results. They further point out that their system also saves time by eliminating detailed correspondence and expensive tracer checking.

A double check on all transactions is made when periodic notations of shipments, deliveries and payments are made to headquarters' office in Crestview.



**ABOVE**—Post card, with rubber-stamped form, invoice, at right, plus separate bank accounts comprise the c.o.d. system.



**Specially Designed—Fully Patented**  
**WHEEL CYLINDER CUP**  
**For CHRYSLER PRODUCTS**



**I**t's an Eis exclusive! A cup that stands up in service . . . and costs less! . . . Features strong flexible ribs which maintain the proper amount of wall tension. From every angle it's the most economical unit for Chrysler replacement. Use R933 or the complete CA-P KIT.



**ANOTHER**

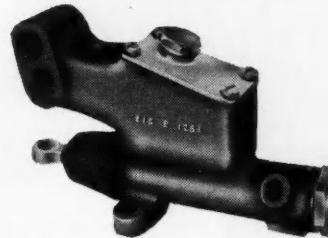
EIS EXCLUS

**FREE**

**CUP INSERTER**  
To make life easier for  
the mechanic, EIS fur-  
nishes a Special Inserter

*Precision*

# MASTER & WHEEL CYLINDERS



**C**areful inspection between operations and final assembly guarantees their precision and ease of installation. Thus you can sell or install Eis Cylinders with full confidence in their "S-TOP Quality" Performance . . . that they will more than meet their responsibility for SAFETY.



**USE EIS SUPER 40 BRAKE  
FLUID! BECAUSE IT'S BETTER**

**Ask your Jobber or write us direct**

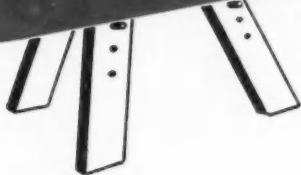
EIS AUTOMOTIVE CORP., Middletown, Conn.

## J OBSERVATION

**A gentleman never blows his  
knows**



# INTRODUCING . . .



... GEORGE LAMSON, named manager, Automotive Replacement Sales Division, Thermoid Co.

... SIDNEY E. MILLER, elevated to the office of vice president in charge of engineering, American Bosch Corp., Springfield, Mass.

... GENERAL THOMAS B. WILSON, elected a member of the Board of Directors of ACF-Brill Motors Co.

Appointment of CLARENCE H. ENDRESS as chief engineer of Willard Storage Battery Co. has been announced by C. E. Murray, executive vice-president.



... EDWIN W. STOLZENBERG, as sales promotion manager of The Trailmobile Company.

## NEW SPECIFICATIONS

for use  
on any  
truck  
in any  
state

Yankee "920"—the complete 4-lamp set with flasher switch and wiring—is the last word in truck directional signals . . . meets the new S.A.E. specifications for all Class A vehicles, those over 80" in width. New type 4½-inch lamps are finished in black baked enamel over corrosion-resistant "bonderized" steel. The "920" is a money item—cash in on it.

YANKEE METAL PRODUCTS CORP., NORWALK, CONN.

... E. G. EWELL, vice-president of Mack International Motor Truck Corp., named general sales manager of the company's Eastern, Atlantic and Southern Sales Divisions.

Several changes in the Associated Lines Sales division of The B. F. Goodrich Co. have been announced by M. G. Huntington, division general manager. H. G. CULBERTSON, formerly manager of the eastern geographic division, retired, and his duties have been taken over by H. M. ROCKWELL in addition to his previous responsibilities.

Three new district field managers are appointed, FRED J. SELL, St. Louis; ROBERT M. FRASHER, Memphis, and L. V. PATTON, Denver, a newly created territory. E. H. MUELLER, who had been district field manager in Atlanta, Georgia, is transferred to Washington, D. C., in a similar post and is succeeded by R. W. COTTERMAN, who had been district field manager in Washington.

... JAMES N. BLISSELL, who has joined Lee Storage Co., Toledo, Ohio, to handle advertising and sales promotion.



... LARRY J. BRENNA, appointed sales manager of the Carry - All Truck Body Div. of Morrison Steel Products, Inc., Buffalo, N. Y.

... ROBERT WARDROP, appointed assistant to the vice-president for Pittsburgh Plate Glass Co.

... RICHARD E. LEONARD, of St. Louis, appointed district sales representative for the Prest-O-Lite Battery Co.

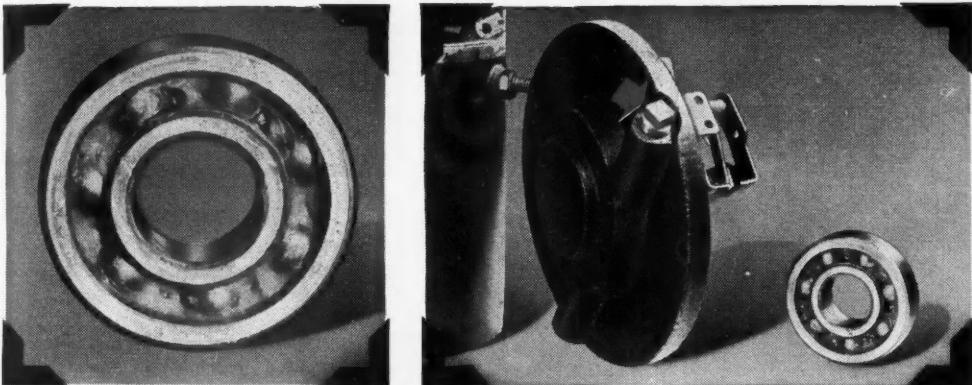
... JAMES E. BORDEAUX, as secretary of the trucking industry's National Classification Board.

(TURN TO PAGE 180, PLEASE)

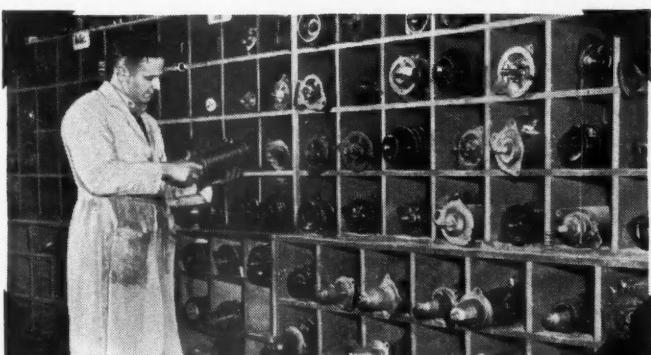
# STANDARD ENGINEER'S REPORT

	DATA
LUBRICANT	<i>Calol O.H.T. Grease</i>
UNIT	<i>Automotive generator bearing</i>
LUBRICATOR	<i>Sealed at installation</i>
CONDITIONS	<i>Heavy-duty diesel truck engine</i>
MILEAGE	<i>70,000</i>
FIRM	<i>H. G. Makelim Co., San Francisco - Oakland</i>

**Sealed generator bearing still perfect after 70,000 miles!**



70,000 MILES OF SERVICE did not affect or use up any of the CALOL O.H.T. Grease in the bearings. In special tests, one filling has lubricated bus-generator bearings perfectly for more than 150,000 miles.



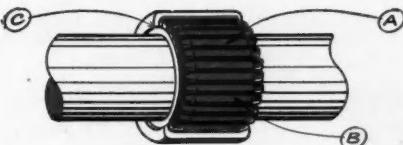
"WITH CALOL O.H.T. GREASE SEALED IN BEARINGS, we recommend installing generators without grease fittings," says Frank Balzarini, H. G. Makelim Co. Foreman. "CALOL O.H.T. eliminates need for greasing between overhauls. And eliminating fittings stops over-greasing—a big cause of wear and trouble."

**REMARKS:** The H. G. Makelim Magneto Repair Company, San Francisco and Oakland, one of the West's oldest automotive-electrical and carburetor repair firms, specializes in servicing equipment in the toughest automotive service—truck, bus and car fleets.

Besides generator bearings in this service, CALOL O.H.T. Grease is recommended for all types of bearings in service under extremely severe operating conditions.

ONE APPLICATION OF CALOL O.H.T. GREASE, sealed in the bearings when this diesel-engine generator was assembled by H. G. Makelim Co., prevented any bearing wear in 70,000 miles of heavy-duty truck service. Generator was disassembled at this time only because it needed new brushes, and for general inspection. Note a permanent plug replaces usual grease fitting.

## How CALOL O. H. T. Grease protects bearings in severest operating conditions



Used in any type of bearing under any operating condition, high temperature-low speed, high speeds to 10,000 rpm, temperatures from minus 10° F. to 400° F., CALOL O.H.T. Grease will last indefinitely.

- A. Contains special oxidation inhibitor—prevents rusting, corrosion, hardening of grease at any time.
- B. Resists high temperatures—eliminates coking.
- C. Provides excellent seal against water... lubricates efficiently in slight moisture.

**FOR MORE INFORMATION**  
If you have a lubrication or fuel problem your Standard Fuel and Lubricant Engineer or Representative will give expert help; or write Standard of California, 225 Bush St., San Francisco 20.

Trademark "CALOL" Reg. U. S. Pat. Off.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco  
THE CALIFORNIA OIL COMPANY • Barber, N. J., Chicago

STANDARD OIL COMPANY OF TEXAS • El Paso, Texas  
THE CALIFORNIA COMPANY • Denver, Colorado

# Introducing . . . . .

Continued from Page 178

... RICHARD R. TETTELBACH, as assistant advertising and sales promotion manager of The Cleveland Chain & Mfg. Co., Cleveland, Ohio.

... H. D. Dawson, assistant general manager of Delco-Remy Division of General Motors since 1947, has been named general manager of the division, succeeding O. V. Badgley, whose retirement was effective Jan. 1.

... D. M. BERGES as chief engineer Pesco Products Division of the Borg-Warner Corp.

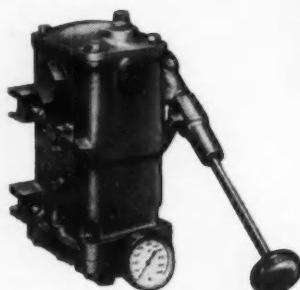
... EDGAR E. GEORGE, district sales representative for the Baker Industrial Truck Division of The Baker-Raulang Co. with headquarters in High Point, N. C.

... GEORGE F. OWENS, who has been appointed district sales manager for the Champion Spark Plug Co. in the Midwest.

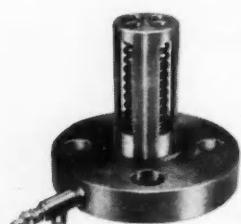
Appointment of HIRSIG-FRAZIER CO., INC., Dallas, as direct factory sales representatives for tire chains, tractor chains and tow chains manufactured by The Cleveland Chain & Mfg. Co., was announced recently by DAVID J. GEMMELL, Cleveland Chain vice-president and director of sales.

... PAUL HUBER, who has been named research engineer and H. G. KAMRATH, liquid filter engineer, by the Fram Corp. of Providence, R. I.

... WILLIAM D. JAMESON, new pump sales manager for the Stamford Division of The Yale & Towne Manufacturing Co.



The hydraulic operator which opens the valves.



Hydraulic Internal Safety Valves are installed inside the tank and are normally closed under spring tension.



The tiny fusible plug shown above is installed at strategic points in the hydraulic line which actuates the Safety Valves.

A carelessly tossed cigarette or match, those two public enemies so often responsible for terrible forest fires, are quite as often responsible for fires and explosions when petroleum truck tanks are being unloaded.

The Shand & Jurs internal hydraulic valve system, the components of which are here illustrated, have been used by many marketers for years on gasoline trucks, and are now being widely applied to L.P.G. equipment. Their purpose is to instantly stop the flow of fuel automatically whenever fire accompanies unloading or a high-way accident.

The little fusible plug, installed in tees in the hydraulic lines which actuate the internal safety valves, melts at 165° F. and automatically releases the hydraulic pressure, which closes all valves which may be discharging.

**SHAND & JURS CO.**  
BERKELEY, CALIFORNIA

NEW YORK      CHICAGO      HOUSTON  
LOS ANGELES      SEATTLE

**S H A N D & J U R S**



JOHN W. DIBBLE, named manager of the Chicago branch of Reo Motors, Inc.

... W. J. FREDERICK and G. F. ZELLER, new managers for the Mack Truck Company's direct factory branches at Newark and New Brunswick, N. J.

... HUGH L. HAYWARD, advertising and sales promotion manager for Fisk-Gillette division of U. S. Rubber Co.

... ALEXANDER VILLIERS, national sales manager of Guaranteed Parts Co., Inc., Seneca Falls, N. Y.

... T. H. CABLE of New York who has joined the sales department of Koppers Co., Inc.



CLIFF S. GARSTANG, appointed general sales manager of the Barrett Equipment Co., St. Louis.

A new truck representative has joined the field organization of The Studebaker Corp. LAWRENCE L. POHLMAN has been assigned to Studebaker regional headquarters in St. Louis while Luther Pohl's base is the company's regional office in Cleveland.

... J. C. MARSHALL who has been named manager, retail merchandising, for the U. S. Tire Division of U. S. Rubber Co.

... P. H. McMANUS has been appointed general sales manager of Templeton, Kenly & Co., Chicago, Ill., manufacturers of Simplex Jacks.

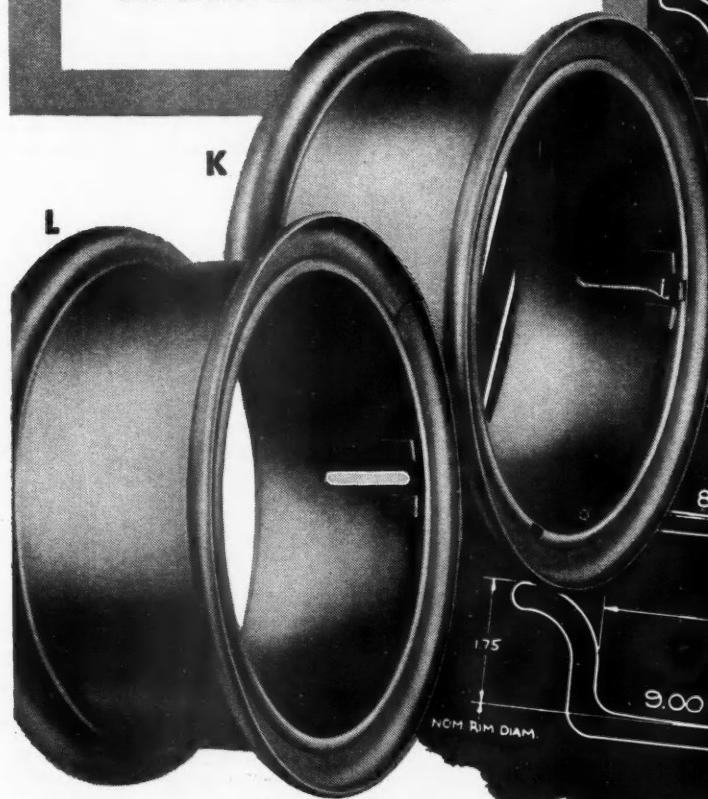
... J. A. CORTRIGHT, general sales manager for the Clayton Mfg. Co. of El Monte, Calif., has announced the appointment of (TURN TO PAGE 182, PLEASE)

**Standards are established  
by usage**

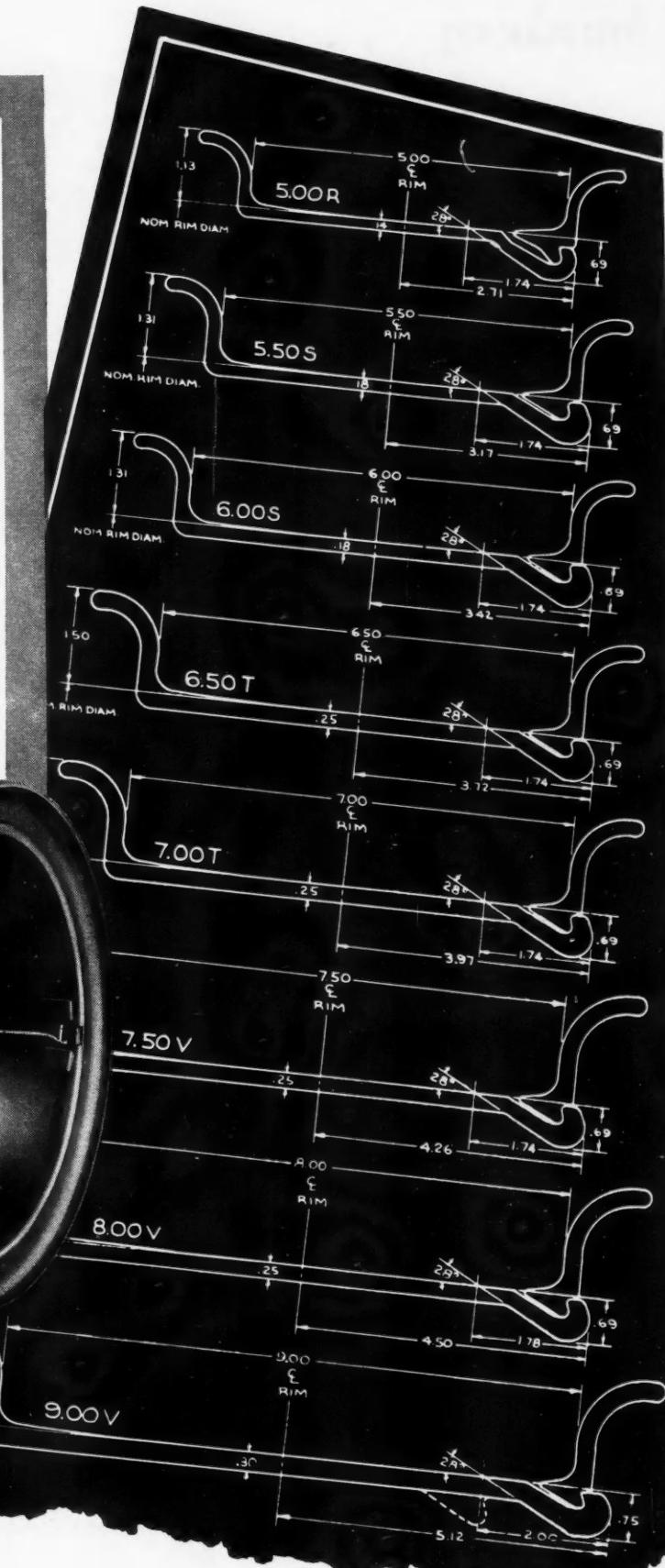
## **THE 70 AND 5 GOODYEAR WIDE-BASE RIMS**

*Over six million now in service tell the story of a Rim Standard approved by the Tire & Rim Association, Inc.*

The **only** wide-base rims of uniform design in all standard sizes and generally accepted by Truck, Bus and Trailer manufacturers.



**Two types in all standard sizes  
Minimum weight and adequate strength  
assure maximum tire mileage**



# **GOOD YEAR RIMS**

*We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network*

# Introducing . . . . .

Continued from Page 180

William O. Merritt as sales promotion manager. Merritt, who assumed his new post the first of this year, served for nine years as public relations, sales promotion and training director for the Bear Manufacturing Co. of Rock Island, Ill.

... ORDWAY F. PIEL, district representative for the Auto-Lite Battery Corp. in Pittsburgh, Pa., and ALBERT GUNDERSON, Westchester County representative in New York.

... ROGER M. KYES, assistant general manager for GMC Truck & Coach Div. of General Motors Corp.

... E. W. ALLISON, who has been elected secretary-treasurer of Detrex Corp. in Detroit, Mich.

... JESSE M. SUGGS, district manager for K-D Lamp Co. with headquarters in Memphis.

... LOUIS R. RIPLEY, who has been elected president of the Heli-Coil Corp., Long Island City, N. Y.

... T. A. KREUSER, of Bendix Aviation Corp., Products Division, in South Bend, Ind., re-elected president of the Automotive Electric Association.

... HARVEY C. FRUEHAUF, of Fruehauf Trailer Co., Detroit, has been elected a director of Georgia-Pacific Plywood & Lumber Co. of New York City.

... G. A. FREDERICKS, supervisor of all field accounting for GMC Truck & Coach Division of General Motors Corp.

... T. H. MCNEILL of Houston, Texas, recently named sales representative for the Automotive Chemicals Division of E. F. Drew & Co., Inc., of New York.

... In charge of petroleum and allied product sales for Gulf Oil Corp.: W. R. HUBER, general manager, retail marketing; D. P. CLARK, general manager, direct marketing; W. E. DERMODY, advertising manager; C. E. SKINNER, commercial research engineer; G. T. RYAN, operations manager.

... T. TYLER SWEENEY, who has been elected a director of Seiberling Rubber Co.

... WILLIAM A. HAYS, appointed manager of the New Orleans district of the Replacement Tire Sales Division of the B. F. Goodrich Co., succeeding DONALD A. LAGARD, who has been transferred to Atlanta, Ga.

... RAY L. MORRISON, executive vice president of the DeVilbiss Co., Toledo, Ohio.

... FRED'K C. SHAVER, elected president and chairman of the board of directors of the Imperial Brass Mfg. Co., Chicago.

... H. E. STEINBRINK, Eastern regional sales manager of the Highway Trailer Co., Edgerton, Wis.



... R. P. (BUCK) WEAVER, appointed Detroit branch manager of the Highway Trailer Co.

... E. W. LUTZ, named credit manager of the General Tire & Rubber Co.

... RALPH D. YATES, named chief of the American Trucking Associations' Government Traffic Section. He succeeds E. F. MACMILLAN who has resigned to open an office as a transportation consultant.

... GEORGE F. JENKINS, appointed sales manager of the National Screw and Mfg. Co., Cleveland, Ohio.

... O. B. CASEY, national service manager of the Detroit Automotive Products Corp., formerly the Thornton Tandem Co.

(TURN TO PAGE 184, PLEASE)

**LIGHT . . .  
TOUGH . . .  
STRONG . . .**

FORGED FROM SELECTED ALLOY STEEL

Williams "Superrenches" provide great strength with minimum bulk and weight. Drop-forged from selected alloy steel and heat-treated, they are available in a wide range of sizes and many patterns. Chrome-plated over nickel with highly polished heads. Write for Williams Catalog A-50.



J. H. WILLIAMS & CO., AUTOMOTIVE DIVISION, BUFFALO 7, N. Y.

Used and Recommended  
by over 70% of all  
Truck and Bus Manufacturers

LOWEST

HIGHEST PERFORMANCE

MAINTENANCE COST

**REPLACE  
WITH  
ZOLLNER  
THE "ENGINEER  
APPROVED" PISTON**

You are safe and sure when you follow the recommendation of your engine designers. Specifically tailored to individual engine specifications, Zollner Pistons are the expert product of hand-in-hand engineering development with engine builders. You get utmost performance and economy of operation when you recondition with Zollner "Engineer Approved" Pistons. Today, as for many years, over 70% of all makes of trucks and buses are Zollner equipped. Like the vast majority of fleet owners, your experience records will prove Zollner is always the "best buy" in pistons—the choice of automotive engineers.



# ZOLLNER

**HEAVY DUTY PISTON EQUIPMENT**

ORIGINAL  
EQUIPMENT  
IN AMERICA'S  
FINEST  
MOTORS

ZOLLNER MACHINE WORKS

FORT WAYNE, INDIANA

# Introducing . . . . .

Continued from Page 182

J. T. SULLIVAN, motor truck district manager in Portland, Ore., for the International Harvester Co.

W. L. TOMLINSON, promoted to manager of automotive glass sales for Pittsburgh Plate Glass Co.

FRANK P. HERMAN, elected a member of the board of directors of Purolator Products, Inc.

PAUL OXLEY, K-D district sales manager for Alabama, Georgia and Florida. PAUL KERN, K-D district manager for half of Ohio and parts of Indiana, Kentucky and West Virginia.

J. M. SPANGLER, appointed president of the National Carbon Div. of the Union Carbide and Carbon Corp. He was the former director, vice-president and general manager of the Div.

B. C. KOENITZER, named manager of the Lansing, Mich., terminal of the Geo. F. Alger Co.

MURRAY LITTLEFIELD, appointed New England district manager of the William & Harvey Rowland, Inc., Philadelphia.

WALTER M. CAGE, named sales engineer, with headquarters in Cleveland, Ohio, for the Allen Electric and Equipment Co.

PHILIP NORTON, president of the Internal Combustion Engine Institute.

LEE H. LUNDY, named branch manager for the White Motor Co., in Philadelphia. Mr. Lundy succeeds E. R. KINNEBREW, who is taking over the White distributorship in Memphis, Tenn.



A. RAND BALDWIN, representing E. F. Drew & Co. in Southern California, Arizona and Nevada. GEORGE B. HOWE, Drew representative in Northern California and parts of Nevada.

CLARENCE G. WOOD, elected a member of the board of directors and vice-president of the Karyall Body, Inc.

ROSS CHASTAIN, appointed special representative in charge of field sales for the Eis Corp., Middletown, Conn.

W. F. WRIGHTNOUR, director of training, tire div., United States Rubber Co.

L. W. FRIZZELL, appointed manager of the tire, battery and accessory unit of the domestic marketing department of the Gulf Oil Corp.

FRED C. SCHEEL, manager of truck sales for Lare & West, Inc., Ford dealers in Detroit, Mich. He was formerly with the Federal Motor Truck Co.

Appointed regional truck managers for the Dodge Div., Chrysler Corp.: CLARENCE S. EISENHUTH, Philadelphia; SAM C. MITCHELL, Portland, Ore.; THOMAS A. TINGLE, Atlanta; WILLIAM K. WEST, Oklahoma City; EUGENE A. REES, Kansas City region.

WILLIAM F. ROCHE and THOMAS R. REDWOOD, representing the Radiator Specialty Co. in the Wilkes-Barre and Albany districts respectively.

O. S. DOLLISON, elected vice-president of the Lee Rubber and Tire Corp. E. M. IKIRT, appointed general manager of their Republic Rubber Div.

NORMAN HILL, manager of service products sales for the New Departure Div., General Motors Corp.

M. RUSSELL KAMBACH, named advertising manager for Aluminum Co. of America.

(TURN TO PAGE 188, PLEASE)

*Here is Big News!*



BULK SIZES

*At New Low Prices*

- Develops PLENTY OF SUDS IN EITHER HOT OR COLD, HARD OR SOFT WATER.
- Simple application cuts grease, grime, leaves a clean shiny surface.
- Does not affect waxed or porcelainized finishes.
- No WIPING DRY necessary. Very economical to use.

*Get Stanley's new car wash prices from your jobber today or write to—*

*Makers of the Famous MOBO Products*

**JOHN T. STANLEY CO., INC.**

642 W. 30th St.

Est. 1865

New York 1, N. Y.

(Made in U. S. A.)

# TACHOGRAPH

THE TIME-TESTED RECORDING SPEEDOMETER

## Helps Drivers Control Vehicles...Encourages Good Driving Practices

Trucks, tractors, trailers, buses and other heavy-duty vehicles represent a big investment and must be handled efficiently if operation is to be profitable. One of the best assets a fleet operator can have to assure maximum protection of costly rolling stock is safe, confident drivers. Here's where Tachographs can help because they aid drivers in controlling their vehicles and encourage good driving practices.

Hundreds of fleet operators have found that through the use of Tachographs their payloads are handled efficiently, safely and economically. These time-tested recording speedometers permanently record every movement of each vehicle on a chart which graphically shows—When engine started... How long engine idled... When vehicle started to move... How fast it traveled... and distance traveled between stops.

### READ HOW TACHOGRAPH HAS HELPED THESE DRIVERS



"My company requires 5 check stops for each run. If anything happens to the truck enroute that could be charged to negligence the Tachograph chart is there to show if I made my last check stop. It gives me a feeling of confidence to know that as long as I drive right my company is fully aware of it. In other words I feel that my years with P. I. E. have been fully recorded, thanks to Tachograph."

Ralph Massey  
PACIFIC INTERMOUNTAIN EXPRESS



"I have heard a lot of fellow truck drivers say that Tachographs are just a bunch of telltales so the company will know all that goes on. I don't look at them that way. I truly believe they have helped my company in their Safety Program. I know they have helped me in mine, because they record all I do, and I try to bring in a chart showing careful practices."

John C. Disharoon  
COASTAL TANK LINES



"The Tachograph has played an important part in helping me build my own personal safe driving record of more than a million miles or 16 years without a chargeable accident... the Tachograph helps the safe driver to drive safely."

John R. Winter (1947 Illinois Tractor-Trailer Champion)  
DOHRN TRANSFER CO.



"While coming in on a run, I jackknifed the truck making a corner. The roads were very icy and I had been driving slow. If I had not had the Tachograph to prove I had not been driving over 15 miles an hour, in that area, I would have lost my job. The Tachograph and its chart makes me a safer driver and my safe driving makes my job more secure."

Chris Seifert  
RUAN TRANSPORT CO.

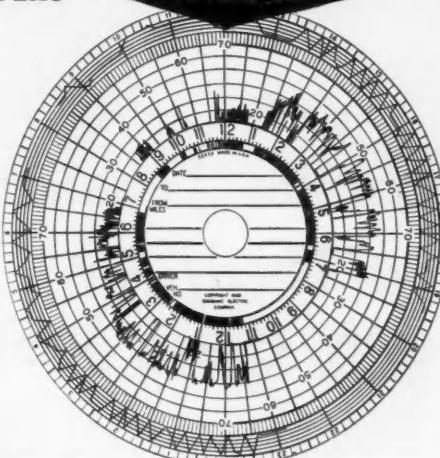


"The Tachograph has helped me to become more efficient in my work—I can tell just how long I will be on each trip I pull without breaking any speed limits, and I know I will have a charted record to show where time was lost if I don't keep my schedule."

Sanders L. Carey  
COASTAL TANK LINES



CHART RECORDS  
ALL  
MOVEMENTS



Mail this Coupon for Complete Information.

**Wagner Electric Corporation**

6476 PLYMOUTH AVE., ST. LOUIS 14, MO.

Please send a copy of Bulletin SU-3B.

Name and Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

We operate \_\_\_\_\_ Vehicles  
(NUMBER)

550-1

DISTRIBUTED BY  
**Wagnew**  
Electric Corporation

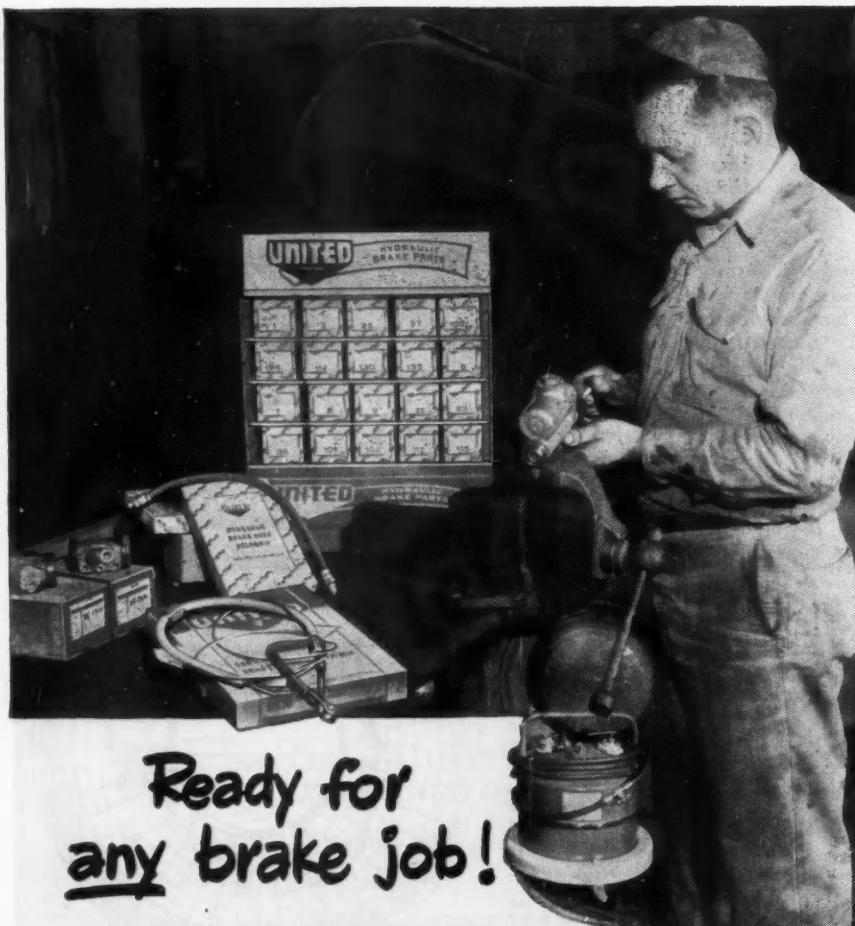
Oversize salt hopper holds 1000 lb., and 5000 lb extra is carried in bags, as shown



## Harrisburg Installs

Total labor and material cost of \$500 nets  
Pennsylvania property efficient salt spreader

**EDITORS' NOTE**—Inasmuch as many properties undertake special construction projects during the summer, this article may supply inspiration for a very important piece of safety equipment within the limit of most budgets.



**Ready for  
any brake job!**

Complete brake service pays off well, and United brings you everything you need for it! In the well-equipped shop shown here, for instance, are a United assortment of brake kits and parts . . . United brake hose assemblies . . . United master and wheel cylinders . . . United brake cables . . . a United bleeder tank. And all of these United parts and equipment are designed, engineered, and manufactured to make your work simpler, easier, and faster! Ask your NAPA Jobber about United's complete coverage! United Parts Mfg. Co., 1250 W. Van Buren St., Chicago 7.

**UNITED**

HYDRAULIC BRAKE PARTS • BRAKE CABLES

SPEEDOMETER CABLES • FUEL PUMP PARTS



### 6000 Lb. Salt Carried

THE original hopper on the unit had a capacity of 200 lb. of salt. This had to be replenished quite frequently, so we constructed a wooden hopper extension which was placed

# Salt Spreaders in Over-Age Buses

By V. E. Zimmerman

Superintendent of Bus Maintenance  
Harrisburg Railways Co., Harrisburg, Pa.

above the floor over the main unit. It feeds by gravity into the hopper on the spreader. This gives us a capacity of 1000 lb. In addition, each bus carries 50 100-lb. bags of salt, making a total load of 6000 lb.

Only one man is required to operate these vehicles. At the beginning of the run, the operator starts the spreader engine, which revolves a spinner and runs constantly. The chute, feeding the spinner, is controlled by a shutter. The shutter, in turn, is controlled by a cable and lever mounted to the right of the operator's seat.

We placed a mirror in the rear of the bus directly above the hopper. This reflects into a mirror above the windshield, and enables the operator to know, without leaving his seat, when the hopper should be refilled. Once the unit is in operation, the driver only has the chute lever to control, except for refilling the hopper when the supply of salt is exhausted.

The spreader also is equipped with a light which focuses to the rear of the vehicle on the area being treated. This assists the operator to check whether the unit is spreading properly.

Previously, our employees hesitated before volunteering for snow duty. Since these vehicles were put in operation, however, they agree to work extra hours more readily.

The cost of labor and material to convert these buses to salt spreaders was approximately \$500, and required 30 man-hours.

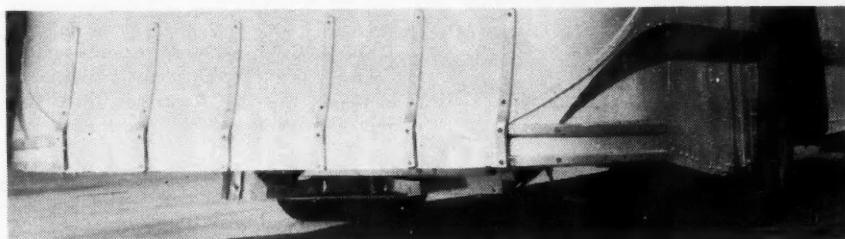
END

\*\*\*\*\*

## SLOWGAN

For a lasting finish on  
your truck, try beating  
the train to a crossing

\*\*\*\*\*



Delivery end of Tarco Scotsman salt spreader is visible below body line

for greater safety

K-D's  
*New Class "A"*

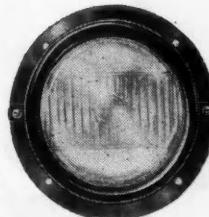


## TURN SIGNAL LITES



KD 775  
BRACKET OR  
FENDER MOUNTING

The new SAE Class "A" Turn Signal Lites require at least 12 square inches of luminous area . . . the current trend of requirements by states. As usual, K-D is ready with the new KD 775 Class "A" Lites with 4½" diameter Amber or Red lens . . . exceeding all specifications. Lens easily located by notch in door . . . locked in place for easy removal of the 21 c.p. bulb. KD 775 Lites of heavy-duty construction . . . finished in black enamel . . . have brass silver-plated reflectors.



KD 775  
FLUSH  
MOUNTING



KD 714  
FLASHING

KD 714 Flashing Switch . . . built-in flasher with the audible click . . . both continuous in operation . . . completes the installation with any KD Turn Signal Lites.

OTHER KD TURN SIGNAL LITES  
Single Face - - KD 9457  
Double Face - - KD 9458  
Flush Mounting - KD 9459  
Black or Chrome Doors

**K-D LAMP COMPANY** A PRODUCT OF NOMA ELECTRIC CORPORATION  
1910 ELM STREET CINCINNATI 10, OHIO

**Industry Has Specified  
SILENT HOIST Equipment  
• Since 1918 •**

**KRANE KAR** Swing Boom Mobile Crane: for materials-handling, lifting, transporting, positioning, gasoline or Diesel, 1½, 2½, 5 and 10 ton capacities, 9 to 37 ft. booms (or telescopic booms), solid or pneumatic tires. Self-stabilizing without jacks or outriggers; unobstructed vision; fast, flexible, safe, easy to operate.



**WINCHES:** Capstans; Single and Double Drum, Jaw Clutch, Keyed and Friction Clutch Winches. 2,000 to 50,000 lb. Capacities.

**SWING BOOM CRANES:** Trucks: Motor Power Operated; high capacity; takes up only a small space. For handling transformers, cable reels, lamp posts, trees, poles, manhole castings, etc. 9 to 31 ft. booms; one to 10 ton capacities.



**USERS:** AT&T; N. Y. Tel. Co.; T.V.A.; Consolidated Edison Co.; W.U.; Municipalities throughout America.

**WRITE FOR CATALOGS:**

No. 79—KRANE KAR

No. 70—Truck Equipment



## Introducing . . .

Continued from Page 184

. . . P. M. GOFF, assistant regional manager for the Allen Electric and Equipment Co., in region 15—nine states and three Canadian provinces.

. . . RUDOLPH A. GOEPFRICH, appointed chief engineer of the Automotive Brake department, Bendix Products division of the Bendix Aviation Corp., South Bend, Ind.

. . . CHARLES C. WOODARD, promoted to vice president in charge of sales for Bekins Van & Storage Co.

. . . DAVID H. RATNER, elected president of the Keeshin-Hayes Freight Lines, Mattaponi, Ill.

. . . EARL ROBERTS, as sales engineer, Memphis Branch of Black & Decker Mfg. Co. A previous announcement in this department had given him another title. G. A. UNDERWOOD is branch manager at Memphis.

. . . CLARK R. LUPTON, appointed assistant chief engineer of the Automotive Brake department.

. . . E. V. DUFFY, named sales manager of the Pennsylvania Rubber Co.

. . . MALCOLM W. VALENTINE, named superintendent of inspection and quality control for Hunt-Spiller Mfg. Corp., Boston, Mass.

. . . WILLIAM KILGOUR and J. J. MULLEN, territory representatives for the General Tire and Rubber Co. in New York.

. . . CARL G. HORST, manager of retail merchandising of the replacement tire sales division of the B. F. Goodrich Co., W. B. FLORA, manager of retail credit sales.

. . . W. P. (SANDY) SANDERSON, Jr., will take over the southern Mississippi and Louisiana territory; Southeastern Texas will be covered by J. A. (ANDY) YOUNG, while central Texas and southern New Mexico will be worked by E. S. (EDDIE) EISENMAYER; . . . C. W. (CHARLIE) DYER, assigned to the Oklahoma and Texas Panhandle; Florida and southern Alabama will be handled by R. R. (BOB) SLATE; all representing the Bear Mfg. Co.

**END**

**Please resume your reading on P. 186**

## SLOWGAN

The man with a chip on his shoulder carries an unnecessary load



**Dayton Brake Drums  
are Distributed through  
National Wheel & Rim  
Association Members**

AKRON, Ohio	Motor Rim Manufacturers Co.
ALBANY, N. Y.	Wheels Incorporated
ALBUQUERQUE, N. M.	Wheels & Brakes, Inc.
ATLANTA, Ga.	Harris Automotive Service, Inc.
BALTIMORE, Md.	R. W. Norris & Sons
BIRMINGHAM, Ala.	Cruse-Crawford Wheel & Rim Co.
BOSTON, Mass.	Harvey Sales & Service Company
BOSTON, Mass., New England Wheel & Rim Company	
BUFFALO, N. Y.	Frey, The Wheelman, Inc.
CALGARY, Alta., Canada	Fisk Tire Service, Ltd.
CHARLOTTE, N. C.	Carolina Rim & Wheel Company
CHICAGO, Ill.	Stone Wheel, Incorporated
CINCINNATI, Ohio	Rim & Wheel Service
CLEVELAND, Ohio	Motor Rim Manufacturers Co.
COLUMBUS, Ohio	Hayes Wheel & Spring Service
CUMBERLAND, Md.	R. W. Norris & Sons
DALLAS, Texas	Southwest Wheel, Incorporated
DAVENPORT, Iowa	Stone Wheel, Incorporated
DAYTON, Ohio	Rim & Wheel Service
DES MOINES, Iowa	Des Moines Wheel & Rim Co.
DENVER, Colo.	Quinn & McGill Motor Supply
DETROIT, Mich.	H & H Wheel Service, Inc.
DETROIT, Mich.	Rim & Wheel Service Company
DOVER, Del.	R. W. Norris & Sons
EDMONTON, Can.	Alberta Wheel Distributors, Ltd.
FARGO, N. D.	Pioneer Rim & Wheel Company
FARGO, N. D.	Wheel Service Company
GRAND RAPIDS, Mich.	Rim & Wheel Service Co.
HAGERSTOWN, Md.	R. W. Norris & Sons
HARRISBURG, Pa.	Standard Wheel & Rim Co.
HARRISONBURG, Va.	Harrisonburg Wheel & Parts, Inc.
HARTFORD, Conn.	Connecticut Wheel & Rim Co.
HOUSTON, Texas	Southwest Wheel & Equipment Co.
INDIANAPOLIS, Ind.	Indiana Wheel & Rim Co.
JACKSONVILLE, Fla.	Southeast Wheel & Rim Co.
KANSAS CITY, Mo.	Beorbain, Young & Company
KNOXVILLE, Tenn.	Harris Automotive Service, Inc.
LOS ANGELES, Calif.	Motor Rim & Wheel Service of Calif.
LOUISVILLE, Ky.	Auto Wheel & Rim Service
MEMPHIS, Tenn.	Beller Wheel, Brake & Supply Co.
MILWAUKEE, Wis.	Stone Manufacturing Company
MINNEAPOLIS, Minn.	Pioneer Rim & Wheel Co.
MINNEAPOLIS, Minn.	Wheel Service Company
MONTRÉAL, Can.	General Automobile Equip., Ltd.
NASHVILLE, Tenn.	Beller Wheel, Brake & Supply Co.
NEWARK, N. J.	Wheels Incorporated
NEW HAVEN, Conn.	Connecticut Wheel & Rim Co.
NEW ORLEANS, La.	Southern Wheel & Rim Service
NEW YORK, N. Y.	Wheels Incorporated
OKLAHOMA CITY, Okla.	Southwest Wheel, Inc.
OMAHA, Nebr.	Morgan Wheel & Equipment Co.
OMAHA, Nebr.	Omaha Rim & Wheel Company
PEORIA, Ill.	Pearl Wheel & Rim Company
PHILADELPHIA, Pa.	Kay Wheel Sales Company
PITTSBURGH, Pa.	Thomas Wheel & Rim Co., Inc.
PORTLAND, Oregon	Wheel & Rim Sales Company
PORTLAND, Oregon	Auto Wheel Service
RALEIGH, N. C.	Six Robbells, Incorporated
RICHMOND, Va.	Carolina Rim & Wheel Company
ROCHESTER, N. Y.	Dixie Wheel & Rim Company
ROCHESTER, N. Y.	Frey, The Wheelman, Inc.
ST. LOUIS, Mo.	Beorbain, Young & Company
SALISBURY, Md.	R. W. Norris & Sons
SALT LAKE CITY, Utah	Henderson Wheel, Rim Serv.
SAN ANTONIO, Texas	Southwest Wheel & Equip. Co.
SAN FRANCISCO, Calif.	Motor Rim & Wheel Serv. of Calif.
SAN FRANCISCO, Calif.	Wheel Industries, Inc.
SEATTLE, Wash.	Six Robbells, Incorporated
SOUTH BEND, Ind.	Wire & Disc Wheel Sales Co.
SOUTH HILLS, Va.	South Hills Wheel & Parts, Inc.
SPOKANE, Wash.	Bearing & Rim Supply Company
SPRINGFIELD, Ill.	Illinois Wheel & Brake Company
SPRINGFIELD, Mo.	Beorbain, Young & Company
SYRACUSE, N. Y.	Colbourn Wheel & Rim Company
TACOMA, Wash.	Six Robbells, Incorporated
TOLEDO, Ohio	Wheel & Rim Sales Company
TORONTO, Canada	Harpham Brothers, Ltd.
TORONTO, Canada	Wheel & Rim Co. of Canada, Ltd.
VANCOUVER, B. C., Canada	Wheel & Equip., Ltd.
WICHITA, Kansas	Beorbain, Young & Company
WINCHESTER, Va.	R. W. Norris & Sons
WINNIPEG, Can.	Automobile Supply Company, Ltd.
WINNIPEG, Canada	Fort Garry Tire & Service, Ltd.
WINSTON-SALEM, N. C.	United Automotive Service

# TULSA\* WINCHES INDUSTRIES TERRITORIES



## Distributors FOR TULSA WINCHES

### ALABAMA

Kimerling Truck & Parts Co., Inc., Birmingham  
Robinson Truck & Equipment Co., Mobile

### ARKANSAS

Southern Equipment Company, Fort Smith  
Southern Equipment Co., N. Little Rock

### ARIZONA

Welch Manufacturing Company, Phoenix

### CALIFORNIA

Modern Vehicle Company, San Francisco  
Rankin Brothers, Lynwood  
Standard Auto-Body Co., Inc., Los Angeles

### COLORADO

The Winter Weiss Company, Denver 2

### CONNECTICUT

Truck Equipment Company, Inc., Norwalk  
Truck Industries, Inc., Greenwich  
Curran-Waring Equipment Co., Inc., Norwalk

### DISTRICT OF COLUMBIA

Watson Automotive Equipment Co., Washington

### FLORIDA

Miller Truck Equipment Company, Miami  
Rivers Body Factory, Jacksonville  
West Florida Equipment Company, Marianna

### GEORGIA

Truck Parts Company, Inc., Atlanta

### ILLINOIS

Auto Truck Equipment Sales, Chicago  
Drake-Scruggs Equipment Co., Springfield  
Bill Montgomery Body and Trailer, Salem  
Nix Brothers, Olney  
Scruggs-Drake Equipment Company, Decatur  
Volz Brothers, Inc., Chicago

### INDIANA

South Side Equipment Company, Indianapolis  
Truck Equipment Sales, Fort Wayne  
Roy C. Whayne Supply Company, Evansville

### IOWA

E. Cohn & Sons, Inc., Cedar Rapids  
Pecaut Industrial Supply Company, Sioux City  
Weston Dump Body Company, Des Moines

### IDAHo

The Lang Company, Inc., Boise

### KANSAS

Truck Parts and Equipment, Inc., Wichita 11

### KENTUCKY

Roy C. Whayne Supply Company, Louisville  
Roy C. Whayne Supply Company, Paducah

### LOUISIANA

Dealers Truck Equipment Company, Inc., Shreveport  
Massart Tire & Supply, Lafayette  
Massart Tire & Supply, Lake Charles

### MARYLAND

Watson Automotive Equipment Company, Baltimore

### MASSACHUSETTS

Springfield Commercial Body Co., Inc., Cambridge

### MICHIGAN

Ashton Power Wrecker Equipment Co., Inc., Detroit  
I. H. Gingrich and Sons, Grand Rapids  
Swift Body and Equipment Co., Inc., Saginaw

### MINNESOTA

Bacheller and Dunn, Inc., Duluth 6  
Smith-Dunn Company, Inc., Minneapolis

### MISSISSIPPI

A. P. Lindsey, Distributor, Inc., Jackson

### MISSOURI

The Ashton-Richards Company, Kansas City  
Bailey Auto Body Company, St. Louis  
Cunningham Equipment Company, Springfield  
Rothschild's Iron and Metal Works, Joplin

### MONTANA

Smith Equipment Company, Great Falls

### NEBRASKA

Badger Body Manufacturing Company, Omaha  
Highway Equipment and Supply Co., Lincoln 1

### NEW JERSEY

Auto Truck Equipment Company, Paterson 1  
Adam Black & Sons, Inc., Jersey City  
Transportation Equipment Co., Inc., Newark

### NEW MEXICO

M. & F. Equipment Company, Albuquerque  
Watson Truck and Supply, Hobbs

### NEW YORK

Binghamton-Heil Equipment Corp., Endwell  
Brinberg Body Builders, Long Island City  
Maday Body and Equipment Corp., Buffalo  
Midway Parts and Service Co., Albany 5  
Syracuse Auto Parts, Inc., Syracuse

### NORTH CAROLINA

Mitchell Distributing Company, Inc., Raleigh  
Mitchell Distributing Company, Inc., Spruce Pine  
Twin-States Equipment Company, Charlotte

### NORTH DAKOTA

Smith, Incorporated, Fargo

### OHIO

The Melvin L. Aston Welding Company, Cincinnati  
The Carnegie Body Company, Cleveland  
The Dayton Wood Products Company, Dayton  
Hercules Body Sales Company, Columbus  
Middlekauff, Inc., Toledo  
Zanesville Tool and Supply Company, Wooster  
Zanesville Tool and Supply Company, Zanesville

### OKLAHOMA

American Body and Trailer, Inc., Oklahoma City  
American Body and Trailer, Inc., Tulsa  
Leland Equipment Company, Oklahoma City  
Leland Equipment Company, Tulsa

### OREGON

Jack Helser Machinery Company, Portland

### PENNSYLVANIA

Doerr Brothers, Inc., Pittsburgh  
Fowler and Fowler, Inc., Oil City  
Wm. & Harvey Rowland, Inc., Philadelphia  
Traile Mfg. & Sales Co., Hummel's Wharf

### SOUTH DAKOTA

Pecaut Industrial Supply Company, Sioux Falls

### TENNESSEE

Furlow-Cate, Inc., Chattanooga  
Martin Machinery and Supply Company, Knoxville 1  
Martin Machinery and Supply Company, Nashville  
Rogers Manufacturing Co., Inc., Nashville  
Scruggs Equipment Company, Memphis

### TEXAS

Adams Truck Company, Inc., San Antonio  
American Body and Trailor, Inc., Amarillo  
City Welding Shop, Borger  
Commercial Truck Company, Lubbock  
Alex Feigelson Company, Beaumont  
French Tool and Supply Co., Odessa  
Hobbs Trailer Sales Company, El Paso  
Leland Equipment Company, Longview  
Don Maxwell Company, Odessa  
Motor Truck Equipment Corp., Dallas  
Motor Truck Equipment Corp., Fort Worth  
Oilfield Truck Equipment Company, Houston  
Truckers Equipment, Inc., Corpus Christi  
Wichita Engineering Company, Wichita Falls

### UTAH

The Lang Company, Inc., Salt Lake City

### VIRGINIA

Smith-Moore Body Company, Inc., Richmond  
Transit Trailer Company, Portsmouth

### WASHINGTON

Andrews Equipment Service of Wash., Inc., Spokane  
Utility Trailer Co., Seattle

### WEST VIRGINIA

West Virginia Tractor and Equipment Co., Inc., Charleston

### WISCONSIN

Mulline Body, Inc., Milwaukee  
Northern Truck Service, Green Bay

### WYOMING

Gehring Equipment Company, Casper

### FOREIGN COUNTRIES

### CANADA

Ferguson Supply Alberta Limited, Calgary, Alta.  
Truck Parts & Equipment Ltd., Vancouver, B. C.  
Willcock Distributing Company, Vancouver, B. C.  
Phil Wood Industries Limited, Windsor, Ontario

### MEXICO

Auto Servicio, S. A., Mexico, D. F.

### NEW ZEALAND

Motor Specialties Ltd., Auckland, C.I.

### VENEZUELA

Joaquin Avellan, Caracas

### BRITISH WEST INDIES

Neal & Massy Engineering Company Ltd., Trinidad

### AFRICA

W. S. Thomas and Taylor Ltd., Union of S. Africa, c/o J. A. Ewing & McDonald, Inc., New York 16, N. Y.

### HAWAII

A. F. Stubenberg Ltd., Honolulu 13

For detailed information please write your nearest distributor or direct to Tulsa Winch

**Tulsa Winch**  
DIVISION OF  
TULSA, OKLAHOMA VICKERS INC.

815-19 E. FIRST STREET

\*Reg. U. S. Pat. Off.

THE WORLD'S LARGEST MANUFACTURER OF TRUCK POWER WINCHES

## CCJ News Reports

Continued from Page 27

Principal speakers at the meeting are (left to right) : Dr. J. O. Christianson, Lee R. Jackson, Albert Bradley.



### IHC Movie Shown

Two 30-min. color movies, produced and distributed by the motor truck division of International Harvester Co., are scheduled to show before more than 5,000,000 persons during the year 1950, company officials have announced. Both are sound movies.

One film, "An African Adventure," comprises action pictures taken by Commander Attilio Gatti, noted explorer, during a recent safari to the Mountains of the Moon and Mount Kilimanjaro, "the roof of Africa." The other film, entitled "International Presents the New L-line Trucks," features photography of the severe testing of trucks on the proving ground and over roads and highways throughout the country.

### B-W Opens Training Program

A new sales and service educational program, for company distributors and truck and bus operators, has been announced by Bendix-Westinghouse Automotive Air Brake Co., Elyria, Ohio.

The complete program consists of two types of training meetings; a Service Clinic for operators and a Sales Training Program for the sales and service employees of Bendix-Westinghouse distributors.

The Service Clinic is intended specifically for personnel of truck and bus operators and is designed to familiarize them with air brake equipment and service problems. Slide films illustrating equipment on the vehicle point out techniques for diagnosing service requirements and simplifying maintenance problems. Sales training meetings for distributor personnel will be held by trained factory representatives.

### Freight Volume Up

The volume of intercity freight hauled by Class I motor carriers in the fourth quarter of 1949 increased 3.4 per cent over that carried in the same period last year. It compares with increases of 2.9 per cent in the first quarter, 3.4 per cent in the second quarter, and 6.7 per cent in the third quarter of this year as compared to the same quarters last year.

The Research Department of the American Trucking Associations, Inc., analyzed reports of 1,434 Class I intercity common and contract carriers indicate that they carried an aggregate of 35,222,315 tons in the fourth quarter of 1949 as compared to 34,068,652 tons in the same period last year.

*as advertised in*  
**THE MIRROR OF MODERN  
POST**

**At Last! Graphite is**

**Miracle Power**

8 FLUID OUNCES U. S. MEASURE

COLLOIDAL GRAPHITE IN SUSPENSION  
PUTS THE "PURR-R-R"  
IN PERFORMANCE

*The Engine Care That Retards Wear*

**PREVENTS DRY STARTING**

When a cold engine is started, it may be five minutes before oil reaches all parts. This DRY STARTING—dry metal scraping against dry metal—means costly repairs. Miracle Power prevents DRY STARTING by providing "stand-by lubrication."

The volume of freight transported by motor carriers in January increased 1.9 per cent over December and 12.3 per cent over January, 1949.

Comparable reports received by AIA from 312 carriers in 44 states showed these carriers transported an aggregate of 3,147,259 tons in January, as against 3,088,151 tons in December and 2,802,980 tons in January, 1949.

Approximately 74 per cent of all tonnage transported in the month was hauled by carriers of general freight. The volume in this category increased 4.0 per cent over December and 15.2 per cent over January, 1949.

### A-H Film Aids Mechanics

A new sound-slide film which graphically shows points which the repairman should check when reconditioning an engine, has been produced by the American Hammered Piston Ring Department of Koppers Company, Inc. It will be shown at dealer and jobber meetings throughout the country during the coming year.

The sound-slide film constitutes a review of engine repair, and is designed to be followed by a panel discussion. At such discussions a jobber, shop foreman, a fleet operator, a leading independent repairman of the area, and a Koppers Co. factory

representative will discuss additional topics and answer questions.

### Shale Oil Fuel Report

Progress in developing synthetic fuels from oil shale and coal is reported by Interior Secretary Chapman in his 1949 report to Congress. These fuels, he stated, are nearing the competitive range of those from petroleum. His report presents a detailed summary of the activities and findings at each of the laboratories and demonstration plants of the Bureau of Mines.

### Truck Registrations Down

New truck registrations for January, based on tabulations in 37 states, were running slightly lower than for January, 1949, the totals being 47,983 for January, 1950, and 49,303 units for January, 1949. The total for the month should approximate 64,000 units, Polk officials estimated.

New car registrations for January will surpass 365,000 units, which will be at least 80,000 units greater than any previous January in the 25 years R. L. Polk & Co. has been compiling statistics for the industry. The highest previous first month was 1937, when 280,615 new passenger cars were titled.

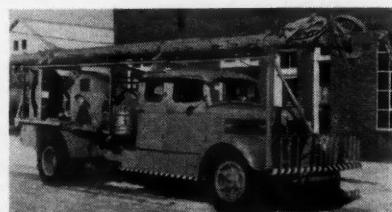
### Compromise Aid Bill Offered

The administration Federal Aid bill for highways has been introduced in the House by Rep. William M. Whittington (D., Miss.), chairman of the House Public Works Committee. Calling for \$570 million annually in aid to the states, it appears to represent a compromise between President Truman's request that regular Federal Aid be held to \$500 million a year and the recommendation of the American Association of State Highway Officials that \$810 million annually be available.

The bill sets aid for primary and secondary systems at \$500 million but it provides a special \$70 million for improvements.

(TURN TO PAGE 194, PLEASE)

### Modern Trucks Service Oil Fields



This oil well service unit with mast, mounted on a Model WC-20 White Super Power truck is capable of rough, off-the-highway service. It is operated by the Stanolind Oil & Gas Company of Tulsa, Okla., in the fields of East Texas. Gross vehicle weight, including the mast and other equipment, is 23,530 lb. Special cab has extra door and seating capacity for a full crew.

**THE AP PARTS CORPORATION**  
Miracle Power Division  
AP BUILDING • TOLEDO 1, OHIO  
MUFFLERS • PIPES • MIRACLE POWER • dgf-123

## CCJ News Reports

Continued from Page 193

ments on the Interstate Highway System—on which emphasis was also placed by Mr. Truman in his budget message—where apportionments would be based on population.

Several changes asked by AASHO are incorporated in the bill. One, designed to make toll roads unnecessary, would allow states to borrow funds for Interstate System improvements through bonds, and retire the principal of the bonds from future

Federal Aid payments. Another would allow states to put up as little as 25 per cent toward Interstate System projects, with the Federal Government putting up as much as 75 (this might even be more in the case of states with much public lands).

### Training Film Available

A new safety training film entitled "Easy on the Eyes" has been announced by the National Safety Council. The film opens on an emotional appeal for workers to realize what their eyes mean to them, then shows how easily eyesight may be lost and

that such loss is personal. The film shows what glasses are best for specific jobs, presents case histories of injured workers and the dramatic testimony of blind persons.

"Easy on the Eyes" is available from the National Safety Council in the usual 35 mm sound slidefilm, but it also is offered in a new form for 16 mm sound-motion projectors.

### Truck Casing Production Up

Production of truck and bus casings was 10 per cent higher in January than it was in December with 1,116,701 units produced against 1,014,946 units in the previous month. Stocks of truck and bus casings were up 8 per cent to 1,877,315 units.

Manufacturers' shipments of passenger car castings in January were up 17.74 per cent to 5,032,879 units from 4,274,442 in December, according to The Rubber Manufacturers Association's monthly report. Shipments of truck and bus casings were down 3.53 per cent to 925,693 from 959,558 units in December.

### Roadeo Membership Announced

Membership of the 1950 National Truck Roadeo Committee of the American Trucking Associations, Inc., has been announced as follows:

Lamar Strain, Petroleum Transportation, Seattle, is the new chairman. Other new members of the committee are Frank W. Leach, The Texas Co., Dallas; Lloyd Deardorff, Consolidated Freightways, Minneapolis, and John M. Flake, Associated Truck Lines, Grand Rapids.

Renamed to the committee were Philander Cooke, Cooke's Express, New Haven; Clarence Finkle, Passaic Terminal & Transfer Co., Allwood, N. J.; James P. McComas, Atlantic Coast Freight Lines, Baltimore; Guy Rutland, Motor Convoy, Inc., Hapeville, Ga.; Ewing Green, Mason & Dixon Lines, Kingsport, Tenn.; Alex K. Scherer, Scherer Freight Lines, Ottawa, Ill.; John Ruan, Ruan Transportation Co., Des Moines; C. L. McClaskey, M. & F. Equipment Co., Albuquerque, and W. J. Rellaford, Asbury System, Los Angeles.

The National Truck Roadeo will be held in New York City in October as part of ATA's sixteenth annual convention.

(TURN TO PAGE 98, PLEASE)



## LABORATORY-TESTED for consistent quality

### SOL-SPEEDI-DRI

SLIPPERY FLOORS VAMOOSE when you use Sol-Speedi-Dri... America's original and largest-selling oil and grease absorbent. Sol-Speedi-Dri gives you a better-looking shop and helps reduce fire hazards too. Production controls and selective mining insure a fine product... laboratory tests safeguard its consistent quality. Available from jobbers everywhere. Mail coupon for big FREE sample!

SPEEDI-DRI CORP., 210 W. Washington Sq., Philadelphia 5, Pa.

Warehouse stocks maintained in principal cities of the United States and Canada.

Inquiries in New York, New England, and New Jersey should write to Speedi-Dri Corp. Elsewhere in U.S. to Waverly Petroleum Products Co., 1724 Chestnut St., Philadelphia 3, Pa.

#### FREE SAMPLE:

Fill out the coupon and mail today for big, free sample.

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CCJ 4-59



"Faster, Mac, faster!—I'm on a schedule!"

# FILTRATION KEEPS OIL CLEAN BETWEEN OIL CHANGES!

PROTECT YOUR ENGINES IN THE CRITICAL PERIOD  
BETWEEN OIL CHANGES WITH WALKER OIL FILTERS

Oil changes are only *half the story* of safe lubrication, sure engine protection.

Because contamination begins immediately after the oil change, your engines must be protected *in the critical period between changes* by an efficient, properly-functioning oil filter.

Walker patented *Laminar* construction takes out the dust and dirt your engines breathe in . . . removes the many, different kinds of engine-manufactured contaminant *before* they build up into an abrasive mixture—*before* they wear away the very parts clean oil protects.

Protect your engine with clean oil *every mile* these three ways:

- ① **Change the oil** periodically to protect against oxidation, dilution and unfilterable contaminants.
- ② **Change the filter cartridge** to prevent the accumulation of abrasives, moisture and sludge *between oil changes*.
- ③ **Change to Walker** to get the added protection of "3-Dimension" filtration *in the critical period between oil changes!*

Take advantage of Walker's superior performance. See your Walker jobber now for both your oil filter and replacement cartridge requirements.

KEEP OIL CLEAN

*between*

# WALKER OIL FILTERS

WITH PATENTED *Laminar*\* CONSTRUCTION

OIL CHANGES



\* TRADE MARK

WALKER MFG. CO. OF WISCONSIN • RACINE, WISCONSIN

## CCJ News Reports

Continued from Page 194

### Diesel Enters "500" Races

Again entered in the 1950 Indianapolis "500" automobile race classic with a diesel-powered car, after an absence of 16 years, the Cummins Engine Co., Columbus, Ind., is confident that they will have a highly competitive entry in the race.

"The engine is a highly supercharged, revised version of the new high-speed JS engine. It is a four-cycle engine with a

piston displacement of 401 cu in. The bore is 4.125 in. with a 5-in. stroke. It is capable of turning up to 4000 r.p.m.

Only 10 in. longer, and approximately 350 lb heavier, than the 4-cylinder Meyer-Drake gasoline engines which made a clean sweep of the top 10 positions in the 1949 "500" race, the Cummins diesel engine will be installed in a modern tubular-frame chassis under construction in the Kurtis-Kraft plant at Los Angeles. The over-all appearance of the Cummins Diesel Special will be very similar to conventional gasoline-powered race cars. It will have a 104-in. wheelbase, which is shorter than some and longer than other cars in last

year's race. Body height from the ground line will be about 38 in., which is approximately 10½ in. lower than the previous Cummins' diesels. The rear axle will be a Conze quick-change racing axle.

### Industrial Notes

An order for 300 motor coaches costing in excess of \$3,500,000 was placed recently by the Bus Operator's Cooperativa, Havana, Cuba, with General Motors Truck & Coach, Pontiac. GM 2-cycle Diesels will power 150 of the heavy duty coaches.

The International Harvester Co. has awarded all but one major contract for the construction of a service parts depot in the Trinity Industrial District in Dallas, Texas.

Recently the first White Super Power Trucks rolled off the assembly line at the Mexico City plant of Automotriz de Mexico, S. A., under an agreement announced by the White Motor Co.

The tire and tube production of the Inland Rubber Corp. of Chicago, has been acquired by the Mansfield Tire and Rubber Co., of Mansfield, Ohio.

At the annual field service meeting, held in Seattle, the Kenworth Motor Truck Corp. played host to its distributors and representatives of their mechanical departments, and to representatives of leading purveyors.

Complete "refresher" courses for Zone and district managers of the Sealed Power Corp. were held recently in a series of coast-to-coast meetings under direction of home office officials.

Contracts for the erection of an additional building have recently been awarded by Oshkosh Motor Truck, Inc., Oshkosh, Wis. The new building will house a new assembly line.

To assist operators to save on their industrial tire and wheel costs, the B. F. Goodrich Co. has developed a tire and wheel analysis service in which experienced tire engineers will visit industrial plants to make complete cost surveys of materials-handling operations.

Trailer servicing facilities have recently been expanded in the Fruehauf Trailer Co. factory branches at St. Paul, Minn., Birmingham, Ala., and Nashville, Tenn.

The new division office of the OPW Corp., Cincinnati, Ohio, in the metropolitan New York City area, is now located at 120 Liberty St.

A new engineering building will be constructed for the International Harvester Co., directly opposite their present Fort Wayne Works.

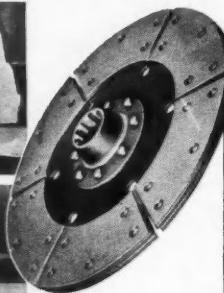
The Black & Decker Mfg. Co. opened a new service station and sales office in Portland, Ore. This branch will offer repair and service to tool users in Oregon, southern Washington and southern Idaho.

(TURN TO PAGE 200, PLEASE)

### The City of New York uses Velvetouch All-Metal Clutch Plates and Facings



For year-round dependability and maximum economy the City of New York specifies Velvetouch . . . the all-metal facing that out-performs and outlasts 'em all! In heavy weather, when snow bound streets put extra strain on clutch plates and facings . . . Velvetouch keeps trucks and tractors "on the job" with fewer adjustments, fewer breakdowns . . . because Velvetouch is built to take it! Send for details today.



25 years of  
service  
1924-1949

FOR BRAKE AND  
CLUTCH USE

#### THE S. K. WELLMAN CO. WAREHOUSING CENTERS

ATLANTA . 119 14th St., N. E.  
BOSTON . 171 Brighton Ave.  
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CLEVELAND . 1392 E. 51st St.  
DALLAS . 3407 Main St.  
LOS ANGELES 1110 S. Hope St.  
PHILADELPHIA 97 E. Montana St.  
PORTLAND 636 N. W. 16th Ave.  
SAN FRANCISCO 424 Bryant St.  
TORONTO, ONTARIO, CANADA  
The S. K. Wellman Co., of  
Canada, Ltd., 2839 Dufferin St.

WASHINGTON, D. C., OFFICE  
1101 Vermont Ave., N. W.

**Velvetouch**

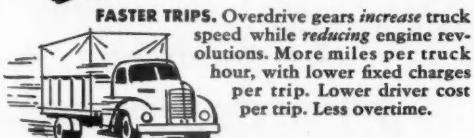
THE S. K. WELLMAN CO.

1374 E. 51st St • Cleveland 3, Ohio

Nature didn't intend  
an elephant to have

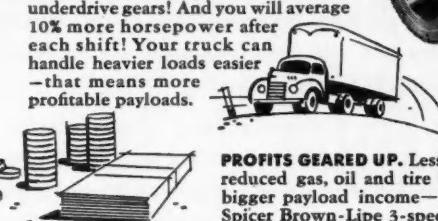
the speed of a horse.....

but the **Spicer** "BROWN-LIPE"  
**AUXILIARY TRANSMISSION**  
gives you all the  
advantages of both



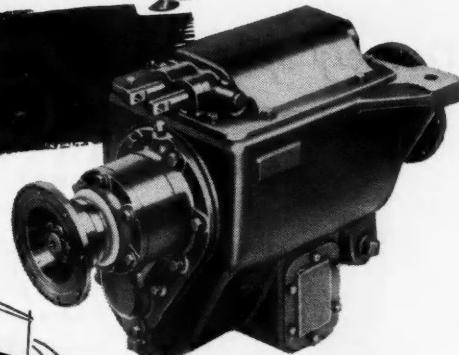
**FASTER TRIPS.** Overdrive gears increase truck speed while reducing engine revolutions. More miles per truck hour, with lower fixed charges per trip. Lower driver cost per trip. Less overtime.

• **MORE POWER.** With a Spicer Brown-Lipe 3-speed Auxiliary, you get from 26% to 111% more pulling power in underdrive gears! And you will average 10% more horsepower after each shift! Your truck can handle heavier loads easier—that means more profitable payloads.



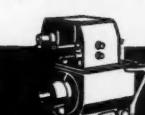
**REDUCE COSTS.** Every unit—motor, clutch, transmission, drive shaft, axle, brakes, tires—operates with less strain. Destructive luggering and overspeeding of engines practically eliminated.

There is a Spicer Brown-Lipe Auxiliary Transmission to exactly meet your needs—Spicer Engineers will help you reduce your cost per ton mile



Available with full torque top mounted power take-off.

**PROFITS GEARED UP.** Less down time; fewer repairs; reduced gas, oil and tire bills; more consistent and bigger payload income—all these are assured by a Spicer Brown-Lipe 3-speed Auxiliary Transmission.



40 YEARS OF  
**Spicer**  
SERVICE

TRANSMISSIONS  
TORQUE CONVERTERS

SPICER MANUFACTURING • Division of Dana Corporation  
TOLEDO 1, OHIO

PASSENGER CAR AXLES • CLUTCHES • PARISH FRAMES • STAMPINGS • FORGINGS  
UNIVERSAL JOINTS • SPICER "BROWN-LIPE" GEAR BOXES • RAILWAY GENERATOR DRIVES

## CCJ News Reports

Continued from Page 193

Starting in March, a training clinic on appearance reconditioning of used cars and trucks is being offered to Ford dealers through the service department, Ford Div., Ford Motor Co.

Two additional electrical division sales offices have been established by Wagner Electric Corp. of St. Louis. These two offices are located in New Orleans at 227 International Trade Mart and in Davenport in the Kahl Building.

Combining the Boston and Buffalo branches, the General Tire & Rubber Co. has formed a northeast sales division with James W. Haggerty as top executive. Headquarters will remain in Boston.

A patent on the Nylon shock shield, which it uses in all its truck and bus tires, has been assigned to the B. F. Goodrich Co.

The National Air Sander, Inc., Rockford, Ill., have just moved offices and factory to a new and larger building in Rockford.

A heavy production on its regular line of economy vehicles, large government Jeep

manufacture for the summer period and the institution of a new sales program are planned by Willys-Overland Motors.

A reduction in fleet and dealer prices on most models of Thornton drives and Load-Booster third axle units for Chevrolet trucks was recently announced by Detroit Automotive Products Corp.

Engineers of the Seiberling Rubber Co. have improved tire design by recontouring the low pressure tire into a "flex-arc" pattern. This design will be used in the company's "Safety" and "Safe-Aire" tires.

Prices of storage batteries have been substantially reduced recently by the Willard Storage Battery Co.

The Electric Auto-Lite Co. reported net earnings for 1949 of \$11,328,420 on sales and other income totaling \$218,439,748. This is equal to \$7.58 per share of common stock. Earnings for the preceding year were \$12,196,493, or \$8.16 per share, on sales of \$210,850,316.

Globe-Union, Inc., manufacturers of storage batteries and spark plugs has opened a sales office in the General Motors Building, Detroit, Mich.

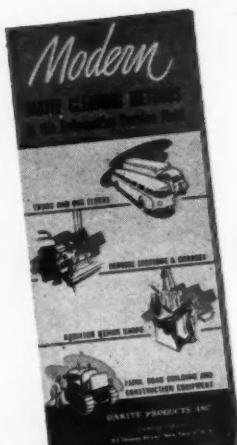
February sales of the Fruehauf Trailer Co. accounted for one of the largest peacetime monthly volumes in the history of the company. The total dollar volume approximated \$8,000,000.

The White Motor Co., in its annual report for the year ended Dec. 31, 1949, showed a net profit of \$970,653, equal to approximately \$1.41 per share. In 1948, White reported net profit of \$3,426,352, equal to \$4.98 per share. Net sales in 1949 amounted to \$77,398,860 as compared with \$97,804,546 in 1948. Number of commercial trucks and busses sold in 1949 was 10,419 as compared with 14,104 in the preceding year.

(TURN TO PAGE 202, PLEASE)

## CLOGGED RADIATORS

*Quickly opened up the low-cost Oakite way!*



Free illustrated Booklet gives details on de-clogging radiators. Tells how to save money on all service shop cleaning jobs. Send today!

IF you are in the market for a really good compound for cleaning out clogged radiators — here it is . . . Oakite Stripper.

Built-for-the job Oakite stripper has powerful cleaning action. It quickly ousts tube-clogging sludge and silt. Solutions stand up for long periods. Up-keep is very low.

Your local Oakite Technical Representative will gladly help you install a simple boil-out set up for your radiator repair work. Just give him a call. Or drop us a post card for complete details. No obligation either way.

OAKITE PRODUCTS, INC., 408 Thames St., NEW YORK 6, N.Y.  
Technical Service Representatives in Principal Cities of U.S. & Canada

# OAKITE

TRADE MARK REG. U. S. PAT. OFF  
SPECIALIZED INDUSTRIAL CLEANING  
MATERIALS • METHODS • SERVICE

## Traveling Workshop



Panel trucks outfitted as workshops in which to display and demonstrate the Lisle line of garage tools have been put into service by the Lisle Corp., Clarinda, Iowa. Carrying a tool board, rod aligner and the company's new wet honing machine, the trucks will tour the country demonstrating Lisle tools to automotive jobbers and working with established jobber salesmen.



**MORE MILES • MORE SATISFACTION**  
**with Belden SPARK PLUG WIRES  
BATTERY CABLES  
PRIMARY WIRES**

**FOR EVERY AUTOMOTIVE WIRING NEED**

**Battery Cables • Spark Plug Wires  
Lighting Wires  
Cordlites, Extension Cords, and Tools**

**Belden**  
*Automotive* **WIRE**

## CCJ News Reports

Continued from Page 200

### Labor Plans Outlined

Publication of a new study of health and welfare plans for trucking company employees which outlines five basic recommendations to truck operators for the setting up of such plans has been announced by Benjamin R. Miller, Director, ATA Industrial Relations Department.

The study titled "Health and Welfare Plan for Trucking Employees" had been

approved recently by the ATA Industrial Relations Committee. In addition to the recommendations to truck operators with respect to inaugurating such plans, the study includes formulas by which an employer may estimate the cost to his particular company of such a program. Further, it includes a complete description of various health and welfare plans which have been acceptable to trucking unions.

### ICC Studies Carrier Status

The "primary business test" and other basic principles enunciated by the ICC in the "Woitishek," "Lenoir" and "Schenley"

cases in distinguishing between private and for-hire motor carriage have again been applied by the commission in the disposition of two more formal proceedings involving the question of private carrier status.

In Docket MC-111212, an application for determination of status brought by the Corry-Jamestown Manufacturing Corp., ICC Examiners B. S. Simms and W. P. Sullivan have recommended dismissal of the contract carrier application upon a finding that the trucking operations involved are an integral part of and incidental to the applicant's principal business of manufacturing steel office furniture and equipment and therefore constitute private carriage for which no ICC operating authority is required.

The Corry-Jamestown operation consisted of transporting uncrated office equipment in its own vehicles to its various customers at charges equal to its actual cost of operation per mile or at the common carrier freight rate whichever was lower, and the pick-up of inbound supplies for its plant at Corry, Pa.

The Corry-Jamestown Corp. contended that its operations were those of a private carrier and filed the instant application with the Commission solely for its own protection in order to obtain an official determination of its status.

By order, dated January 23, in Docket MC-111415, ICC Commissioner Lee has summarily dismissed an application filed by the Marlin-Rockwell Corp. of Jamestown, N. Y., involving a somewhat similar situation.

### Aluminum Production Up 25%

Production of primary aluminum was up more than 25 per cent in January, 1950, over December, 1949, from 82,322,329 pounds to 104,045,600 pounds, Donald M. White, Secretary of The Aluminum Association, reports. Shipments of aluminum sheet, strip and plate also moved up in January to 69,349,363 pounds from 62,524,984 pounds in December.

### Cummins Enters Memphis

Completely equipped to handle the sales and servicing of Cummins Diesel engines in the Tri-State area, the recently constructed \$100,000 plant of the Cummins Diesel Sales Corp. was officially opened in February. The modern building located at 812 North Main St., Memphis, has 12,000 sq ft of floor space.

### George Duck Retires

George H. Duck retired from Lee Rubber & Tire Corp. on April 1. Mr. Duck joined the organization as an assistant to the general sales manager of Lee Tire & Rubber Co. of New York, Inc., 24 years ago and three months later he was made advertising manager. In 1945, he was elected a vice president of Lee Rubber & Tire Corp., in charge of public relations.

(TURN TO PAGE 204, PLEASE)

PLAY SAFE  
DON'T DRIVE WITHOUT  
Signal-Stat  
DIRECTIONAL SIGNALS

THE ONLY DIRECTIONAL SIGNAL WITH THE  
BURN-OUT-PROOF SWITCH

Favored because of their dependability and safety by both owners and drivers, Signal-Stats offer protection under all sorts of operating conditions. Approved by American Association of Motor Vehicle Administrators (AAMVA) and States requiring directional signals.

Signal-Stat CORPORATION  
SIGNAL-STAT BUILDING  
1430 Herkimer St., Brooklyn 33, N. Y.

STANDARD EQUIPMENT ON NATIONALLY ADVERTISED TRUCKS



## LIGHTWEIGHT.. MORE FREIGHT.. BROWN ALUMINUM TRAILERS OPEN NEW MARKETS TO TRUCKERS

THE truckers have won again — with Brown Lightweight Aluminum Trailers.

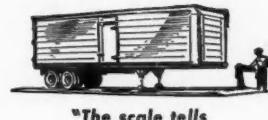
Consolidated Freightways, Inc., hauls frozen fish 2,250 miles from the Pacific Northwest to Chicago. Using 35 Brown Trailers, Consolidated has set a precedent in hauling fresh fish on this run, competing in a new market for the first time. And there's a reason why Browns were chosen for this new venture in trucking.

Brown's lightweight construction puts the weight in the freight, gives operators more payload, more revenue per mile with the same driver hours. Lightweight materials plus a frameless, airplane-type monocoque con-

struction guarantee this weight saving.

And remember, there's only one aluminum trailer that's backed by over a quarter century's experience in working with lightweight metals. That's the Brown—the first and original lightweight aluminum trailer. Brown know-how and technique have kept Brown way ahead of the field, despite many imitations.

If deadweight is costing you dollars, or keeping you from competing in some markets, investigate Brown Aluminum Trailers. Put the weight in the freight where it pays off in revenue. See the Brown representative in your area or write us.



"The scale tells  
the tale"



Toledo, Ohio • Spokane, Washington  
Distributors in all principal cities

## CCJ News Reports

Continued from Page 202

### New Tank Group Officers

The National Truck Tank and Trailer Tank Institute at its annual meeting held February 23 and 24 at Chicago elected the following officers to serve for 1950:

President, John H. Jensen, Quaker City Iron Works, Philadelphia, Pa.; Vice President, R. L. Blodgett, Pennsylvania Furnace & Iron Co., Warren, Pa.; Treasurer, L. R. Wood, Niles Steel Tank Co., Niles, Mich. In addition to the foregoing, Messrs. T. A. Burress, The Heil Co., Milwaukee, Wis., and W. M. Gadberry, Columbian Steel Tank Co., Kansas City, Mo., comprise the newly elected Executive Committee.

The Executive Committee re-elected Allan R. Smith as Executive Secretary of the Institute with headquarters at 120 South La Salle Street, Chicago, Ill.

### Freight Classification Studied

The trucking industry's National Traffic Committee has filed with the Interstate Commerce Commission an application for approval of an agreement covering freight classification matters and other national traffic matters of general interest to the motor carrier industry.

The request was filed under the so-called Reed-Bulwinkle amendment to the Act, which provides for antitrust law immunity for participants in collective rate-making, provided agreements are approved by the ICC and thereafter are strictly observed. At the same time, a Bulwinkle application presented on behalf of the American Trucking Association last year was withdrawn.

Principal differences between the now-withdrawn ATA application and that which is now newly-filed for the National Traffic Committee and participants in the National Motor Freight Classification, Mr. Idol said, may be summarized as follows:

(1) Only Common Carriers are parties to the National Traffic Agreement. ATA

(TURN TO PAGE 206, PLEASE)

## Budd Wheel Distributors

provide the same service described in this advertisement

AKRON—Motor Rim Manufacturers Co.  
ALBANY—Wheels, Incorporated  
ALBUQUERQUE—Wheels & Brakes, Inc.  
ATLANTA—Harris Automotive Service, Inc.  
BALTIMORE—R. W. Norris & Sons, Inc.  
BIRMINGHAM—Cruse-Crawford Wheel & Rim Co.  
BOSTON—New England Wheel & Rim Co.

## Found

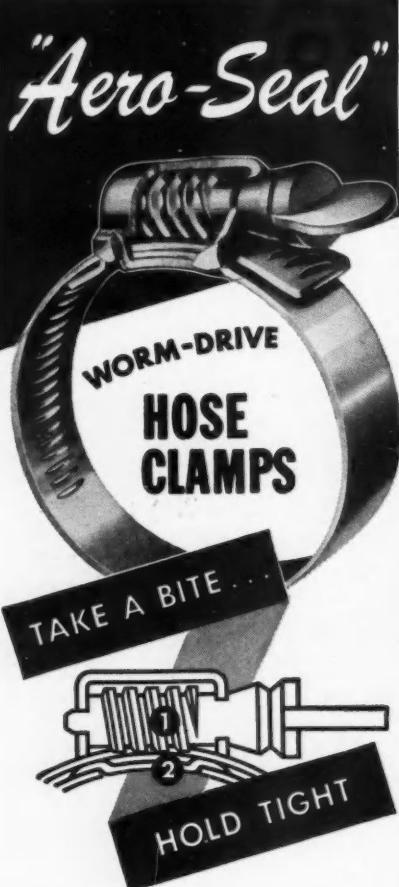
BUFFALO—Frey, the Wheelman, Inc.  
CHARLOTTE—Carolina Rim & Wheel Co.  
CHICAGO—Stone Wheel, Inc.  
CINCINNATI—Rim & Wheel Service, Inc.  
CLEVELAND—Motor Rim Manufacturers Co.  
COLUMBUS—Hayes Wheel & Spring Service  
DALLAS—Southwest Wheel, Inc.  
DAVENPORT—Stone Wheel, Inc.  
DAYTON—Rim & Wheel Service, Inc.  
DENVER—Quinn & McGill Motor Supply Co.  
DES MOINES—Des Moines Wheel & Rim Co.  
DETROIT—H. & H. Wheel Service, Inc.  
FARGO—Wheel Service Company  
FORT WAYNE—Wheel & Rim Sales Co.  
GRAND RAPIDS—Rim & Wheel Service Co.  
HARRISBURG—Standard Wheel & Rim Co.  
HARTFORD—Connecticut Wheel & Rim Co.  
HOUSTON—Southwest Wheel, Inc.  
INDIANAPOLIS—Indiana Wheel & Rim Co.  
JACKSONVILLE—Southeast Wheel & Rim Co.  
KANSAS CITY—Borbein, Young & Co.  
KNOXVILLE—Harris Automotive Service, Inc.  
LOS ANGELES—Wheel Industries, Inc.  
LOUISVILLE—Auto Wheel & Rim Service  
MEMPHIS—Beller Wheel, Brake & Supply Co.  
MILWAUKEE—Stone Manufacturing Co.  
MINNEAPOLIS—Wheel Service Co.  
MOLINE—Mutual Wheel Co.  
NASHVILLE—Beller Wheel, Brake & Supply Co.  
NEWARK—Automotive Safety Inc.  
NEW HAVEN—Connecticut Wheel & Rim Co.  
NEW ORLEANS—Southern Wheel & Rim Co.  
NEW YORK—Wheels, Incorporated  
OKLAHOMA CITY—Southwest Wheel, Inc.  
OMAHA—Morgan Wheel & Equipment Co., Inc.  
PEORIA—Peoria Wheel & Rim Co.  
PHILADELPHIA—Thomas Wheel & Rim Company  
PITTSBURGH—Wheel & Rim Sales Co.  
PORTLAND—Six Robblees, Inc.  
PROVIDENCE—New England Wheel & Rim Company  
RALEIGH—Carolina Rim & Wheel Co.  
RICHMOND—Dixie Wheel Co.  
ROCHESTER—Frey, the Wheelman, Inc.  
SALT LAKE CITY—Henderson Rim & Wheel Service  
SAN ANTONIO—Southwest Wheel, Inc.  
SAN FRANCISCO—Wheel Industries, Inc.  
SEATTLE—Six Robblees, Inc.  
SOUTH BEND—Wire & Disc Wheel Sales & Service  
SPOKANE—Bearing & Rim Supply Co.  
SPRINGFIELD, ILL.—Illinois Wheel & Rim Co.  
SPRINGFIELD, MO.—Borbein, Young & Co.  
ST. LOUIS—Borbein, Young & Co.  
SYRACUSE—Colburn Wheel & Rim Service, Inc.  
TACOMA—Six Robblees, Inc.  
TOLEDO—Wheel & Rim Sales Co.  
WICHITA—Borbein, Young & Co.

### EXPORT

CLEVELAND—C. O. Brandes, Inc.

### CANADA

CALGARY—Fisk Tire Service Ltd.  
EDMONTON—Alberta Wheel Distributors, Ltd.  
MONTREAL—General Auto Equipment Ltd.  
TORONTO—Wheel & Rim Co. of Canada, Ltd.  
VANCOUVER—Wheels & Equipment, Ltd.  
WINNIPEG—Ft. Garry Tire Service Ltd.



**①** At least 3 hardened steel threads always engaged in worm drive action in slotted band.

Clamp unscrews easily but will never work loose.

**②** Worm threads cannot touch or damage hose—curved saddle assures uniform sealing pressure around complete circumference.

- Long Life—use again and again
- Integral construction—no parts to lose
- Corrosion resistant—cadmium plated or stainless steel
- Two types—screwdriver slot or thumb grip



BREEZE CORPORATIONS, INC.  
45 South Sixth Street, Newark, N. J.



"Now they won't be in such a hurry to pass me."



Mileage Contract Tire Supplier Pays Bonus

**AND WHAT WOULD'VE** day when Arkansas Motor Coaches, rolling up 200,000 miles a month between Memphis and Atlanta, increased their tire mileage 40 per cent over to Budd Wheels with wide base rims?

We got the story from salesman Jim Davis by wire. Jim is a member of the Budd Wheel Distributors' Sales Service Department.

"Our mileage was about the average and experience of most suppliers, so you know we operate on a mileage basis, our tires being supplied by one of the major rubber companies," says Jim Davis. "We have had

In April 1949, we ran this ad showing how one bus company increased tire mileage 40 per cent, by changing over to Budd Wheels with wide base rims.

Wheels of Arkansas Motor Coaches. "These

wheels are really paying for themselves, and

they're saving us money."

Arkansas Motor Coaches has

been using Budd Wheels since 1946.

Look for this label (in blue, red and gold) on the rim of every genuine Budd wheel.

## It Paid To Read This Ad

• Eldo Miller of Wheel Industries Inc., Budd wheel distributor in Los Angeles, writes: "The Valley Transit Lines, operating a fleet of buses in El Monte, were having considerable tire trouble. Front tires were cupping so badly they had to be changed after only 10,000 miles of service. The cost was something to think about.

"Finally Mr. Wilson, shop superintendent of Valley Transit, called Wheel Industries into the picture. He said he had read an advertisement in one of the magazines about Budd Wheels and wide base rims. He wanted more information.

"After studying the problem," Mr Miller goes on, "we recommended Budd wheels on 20 x 6.50 rims. Mr. Wilson placed an order for Budd wheels to change over three

buses. (The balance of the fleet was changed over one month later.)

"The record shows a mileage average of over 20,000 miles per tire to date, and there is every reason to expect 30,000 miles on these front tires before they will have to come off for a recap.

"Quite an increase in tire life," says Mr. Wilson, and I quote him, 'the increase in tire mileage has more than paid for the wheels'."

Another example of how Budd wheel distributors can help lick many of the tire-wheel problems confronting fleet operators. If you have a tire problem, why not call on the Budd distributor near you? He is listed in the adjoining column.

The Budd Company, Detroit 14.



Look for this label  
(in blue, red  
and gold)  
on the rim of all  
genuine  
Budd Wheels

## CCJ News Reports

Continued from Page 204

represents all types of motor carriers, and all types are represented by members on its policy-making body, the ATA Executive Committee. (2) The members of the new National Traffic Committee are elected directly by parties to the Agreement. ATA National Traffic Committee members were formerly appointed by the president of ATA. (3) The application as now filed is an express agreement and would be executed by the carriers participating. The

previous application merely implied that such an agreement existed. (4) The new agreement will cover all essential collective action in the rate making field which is of national or general interest to the motor carrier industry, while on the other hand, last year's application filed for ATA covered only classification matters.

### State Legislation

Only eleven states are meeting in regular session this year, and so there is to be much less legislative activity than in the odd years. The following are some of the high spots of interest to trailer operators.

*Sizes and Weights*—In Mississippi, one

bill would increase gross weight from 52,000 to 58,000 lb., and another to 76,000 lb. Two bills are also pending, however, to reduce gross weight to 30,000 lb. The *Virginia* legislature is considering a bill to increase gross weight from 50,000 to 56,800 lb.

Several legislatures are considering increased penalties for violation of size and weight limits. Bills in *New York* provide for increased penalties and authorize civil suits to recover damages caused to highways. Three bills in *Virginia* propose increased penalties for violations and one measure would require trucks to carry manifests showing weight of cargo.

A *Massachusetts* resolution would require the Registrar of Motor Vehicles to make an investigation of overloading practices, with particular reference to the feasibility of erecting scales at various points along the highways. A *Mississippi* bill would make it a criminal offense to detour a port of entry to avoid size and weight inspection.

*Equipment*—*Massachusetts* would require all vehicles, including passenger cars, to carry flares or fuses for use when disabled on highways at night.

*Georgia* defeated a proposed requirement for mudguards or splash aprons on trucks and trailers.

*New York* would require polarized headlamps and windshields on all vehicles manufactured after January 1, 1953. All vehicles registered after that date would be equipped with viewers.

The Kentucky-Tennessee Reciprocity Agreement was revised about the first of the year and now provides that if a *Tennessee* truck is caught overweight in *Kentucky*, the benefits of reciprocity are voided for that vehicle and a \$300 weight tax will then have to be paid on the vehicle to the State of *Kentucky*. This new provision is being strictly enforced by Kentucky authorities.

Port-of-entry legislation has cropped up again in two states. During the special session in *Idaho*, a measure was passed by both Houses authorizing the establishment of ports-of-entry in that State and requiring all carriers of property liable for licensing or payment of taxes, or that may be subject to inspection or grading laws, to stop at such border stations for checking. A *Mississippi* bill would also make it a criminal offense to detour around ports-of-entry to avoid sizes and weight inspection or payment of tax fees.

Bills to increase vehicle or driver licensing fees have been submitted in *Maryland*, *Massachusetts*, *Mississippi* and *Virginia*. In *Kentucky*, a bill has been introduced which would impose a \$250 annual license fee on "nonresident itinerant vendors" by motor vehicle.

Compulsory motor vehicle liability insurance and an increase in the sales tax rate on automobiles, trucks and tractors are under legislative consideration in *Mississippi*.

Toll road proposals are also being considered in *Kentucky*, *Massachusetts*, *New Jersey* and *Rhode Island*.

### MORE NEWS

Will be found on back pages

# Vari-Speed

## HANDY GOVERNOR

### Characteristics and Advantages

- ① No-load speed control.
- ② Close regulation.
- ③ Minimum loss of horsepower.
- ④ Wide speed range with one governor model.

ACTUAL DYNAMOMETER CURVE

Engine Speed (RPM)	Horsepower
1000	30
1500	55
2000	65
2500	85
3000	90
3500	80
4000	60

No OTHER  
VELOCITY GOVERNOR  
CAN GIVE YOU ALL  
THESE ADVANTAGES

# KING-SEELEY CORPORATION

ANN ARBOR MICHIGAN

PLANTS IN  
ANN ARBOR  
GRAND RAPIDS  
YPSILANTI

206

COMMERCIAL CAR JOURNAL, April, 1950



**"DIRT-PROOF" Prevents This—**



Dirty oil clogs ring slots. It also gums valve stem guides and constricts oil passages. An AC Element removes sludge and dirt and keeps oil "Dirt-Proof."

A high percentage of the most successful fleet owners have found it thrifty to "Dirt-Proof" their engine oil with AC Oil Filter Elements.

Quality is the reason for their choice. Every AC Element is engineered for the job it has to do—and manufactured to AC's highest standards.

This uniform quality gives uniform results. Oil stays clean—valves and rings stay free—moving parts are protected against undue wear.

AC makes elements designed for *your* oil filter, which will help you to maintain the power and efficiency of your engines—and to keep maintenance costs satisfactorily low.



AC  
SPARK  
PLUGS



AC  
FUEL  
PUMPS



AC  
AIR  
CLEANERS

AC  
CABLE  
AND  
CASING



*preferred on millions of vehicles*

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

# New Standard Cable Coupler Proposed by ATA Equipment Committee

A NEW standard jumper cable plug and socket for use on semitrailer and trailer combinations is proposed for motor carrier use by the ATA Equipment Committee working in co-

operation with coupler manufacturers, according to R. L. Hardgrove, chairman of the American Trucking Association's Equipment Advisory Committee.

The technical details of the proposed new cable plug and socket design have been worked out by a subcommittee of the ATA Equipment Committee together with engineers of the coupler manufacturers, and the details of the new standardized electric coupler are being released in order to obtain industry comments before final adoption of the new design at the May 1950 meeting of the ATA Equipment Advisory Committee.

The new coupler is one section of the overall specifications for the standardization of interline interchange semitrailers on which the ATA Equipment Committee has been working for almost 2 years. The new plug and connector will be heavy-duty units and will incorporate seven electric circuits.

Proposed specifications have been drafted in such a manner as to allow any manufacturer to construct a coupler meeting the provisions of the new specifications regardless of his method of manufacturing his plug or connector.

The seven circuits are as follows: (1) Ground return line for all units, (2) I.C.C. required marker and clearance lamps, (3) Left hand directional signal, (4) Stop lamp, (5) Right hand directional signal, (6) Tail lamp, three-bar marker lamps and marker lamps other than I.C.C. required, (7) Auxiliary circuit for items such as dome lights, lighted signs, refrigeration blowers or any other units which individual carriers may wish to use on their trailers. The reason for the separation of the circuits is that it will provide more voltage at lights at the extreme rear of long combinations to help meet requirements such as the Cal. state law that requires at least 75 per cent of design voltage at the rearmost lamp of any combination.

With these seven circuits an individual operator can leave off his trailer whatever of the above units he does not need, and still be able to interchange with his connecting carrier.

Further work is being carried out jointly between ATA and The Society of Automotive Engineers to standardize trailer jumper cables. The first step of this work has been the adoption by the ATA Equipment Committee of a color code for the seven circuits mentioned above.

This code is as follows:

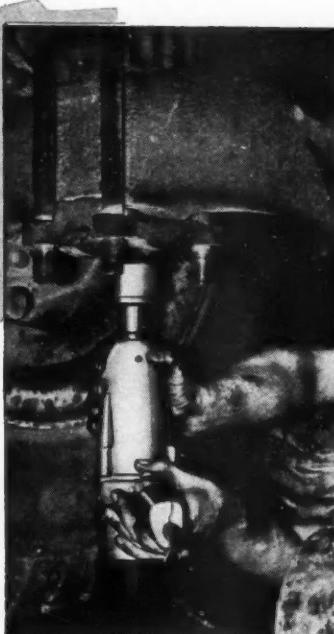
Conductor Number	Wire Color	Lamp and Signal Circuits in Conductor
1	WHITE	Ground return to tractor
2	BLACK	I.C.C. required marker and clearance lamps.
3	YELLOW	Left hand directional signal
4	RED	Stop lamp
5	GREEN	Right hand directional signal
6	BROWN	Tail lamp, three-bar marker lamps and marker lamps other than I.C.C. required.
7	BLUE	Auxiliary lamps.

**MECHANICS  
KNOW THE  
DIFFERENCE!**

*between*

**THE HARD WAY**  
*and the*

**ROTARY ELECTRIC  
R IMPACTOOL WAY**



Ratings

Size 40 — 3/8" bolt dia.  
Size 80 — 5/8" bolt dia.

A mechanic wants and uses tools that make his job easier. Removing and running nuts is one of his most time-consuming and tiring operations. That's why the Ingersoll-Rand Electric IMPACTOOL is tops on his list of labor-aiding tools—it makes the tough jobs easy—it eliminates the kick and twist—even if the spindle is stalled completely there is no motor burn-out—and it saves as much as 90% on nut-running time.

The amazing I-R impact mechanism enables this remarkable tool to be used for many other time-consuming operations.

In fact, when you buy an Ingersoll-Rand Impactool you buy a *real multi-purpose tool*, one that is limited only by your ingenuity—Call your Ingersoll-Rand jobber or distributor and ask for a free demonstration of this amazing tool.

- Rotating Wheels
- Cylinder Heads
- Tapping
- Spring Work
- Oil Pans
- Screw Driving
- Door Hinges
- Driving Studs
- Main Bearings
- Extracting
- Broken Studs

## Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 493-18

ORIGINATOR OF IMPACTOOLS—air and electric

ONLY **WORLD BESTOS** gives you . . .

# "BIG RED"\*



the GUARANTEED **NO FADE BRAKE BLOCK**  
for Trucks, Buses, Trailers in extremely  
heavy duty service . . .

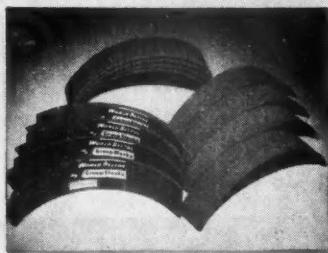
## Plus . . .

a full line of highest quality "Job-Tested" blocks and linings for every type of truck and commercial vehicle!



### World Bestos PRESCRIBED FRICTION TRUCK SETS

Full molded segments for heavy-duty service requiring sizes up to and including  $\frac{3}{8}$ ".



### World Bestos TRUCK GROUP BLOCKS

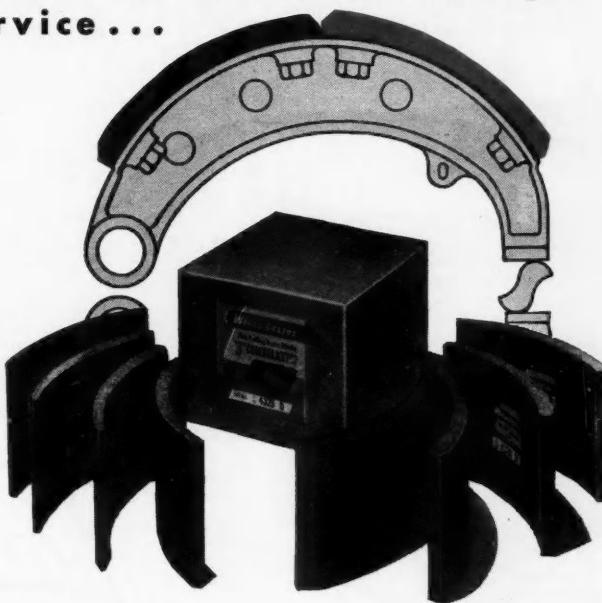
Undrilled heavy-duty segments available in  $\frac{1}{4}$ ",  $\frac{3}{8}$ " and  $\frac{5}{8}$ " thicknesses and varying drum diameters for general service on most trucks and buses.



### World Bestos BRAKE BLOCKS

$\frac{1}{2}$ " thickness and over, for heavy-duty trucks and buses. Available in following World Bestos Compounds: "Y," medium friction; "E," medium high friction; "D," medium low friction.

Write for World Bestos Catalog.



### \* Sensational new BIG RED Block in the "J" Combination

Can't fade . . . even with most abusive use under overload conditions. Guaranteed to eliminate glaze . . . reduce heat-checking . . . give positive brake action, long wearing brakes under severest conditions! Not affected by heat or water.

Complete "J" Combination Sets, with installation instructions, now available to heavy-duty truck, trailer and bus operators. Job Tested to assure perfect performance wherever service is abusive! Specify WORLD BESTOS "J" COMBINATION for original equipment or replacement. If local jobber cannot supply you, write direct to World Bestos, New Castle, Indiana.

#### Distributors and Jobbers:

Get your share of this profitable heavy-duty market . . . with WORLD BESTOS! Write NOW!



# WORLD BESTOS

NEW CASTLE,  
INDIANA

## Factory Service

Continued from Page 14

### Studebaker

#### Brake Squeak 6G-9G; 14A-17A; 2R5

A brake squeak that can be traced to the self-adjusting plug of the forward brake shoe on 6G, 7G, 8G and 9G Champion models and 14A, 15A, 16A and 17A Commander models and 2R5

series truck models, can be eliminated by the use of a Damper Spring, Part No. 527253. The spring is inserted between the self-adjusting plug and the web of the brake shoe at all four wheels. This change was incorporated in production on all passenger cars and 2R5 trucks beginning approximately October 1, 1949.

#### Engine Cylinder Block for 9G, 2R5, 2R10, 2R15

An engine cylinder block, Part No.

524824, is now available for use in either 9G Champion or 2R5, 2R10, and 2R15 truck models. The oil filler pipe holes have been plugged so that the proper filler pipe location can be selected depending upon whether the cylinder block is to be used in a passenger car or truck. The oil filler pipe is not included with the cylinder block.

If the cylinder block is to be used on a 2R5, 2R10, or 2R15 truck model, order Filler Pipe, Part No. 195978, and install in the rear filler pipe hole.

## FWD

### Tire Wobble

A good practical way of eliminating tire wobble is as follows:

1. Raise each wheel off the ground, one at a time, and place a straight edge quite close to the outside of the tire.

2. Rotate the wheel slowly and observe the space between the tire and straight edge to detect any existing tire wobble.

3. If the tire is out too far at any point, the wheel nuts should be tightened at that point and slightly loosened on the opposite side of the wheel if necessary. Repeat this procedure on each wheel until all the tires run true and the wheel nuts are tightened securely and evenly.

NOTE: On dual tire installations the inner tire will run true if the outer tire has been properly lined up.

A check for tire wobble should be made periodically to assure proper steering, to eliminate wheel stud breakage and for tire conservation.

END

Please resume your reading on P. 19

### Co-operative Design



The combined efforts of the Freightliner Corp. and Peerless Trailer and Truck Service resulted in this rig for the Hyster Co. The COE tractor, powered by a 200-hp Cummins diesel, has an extended cab to provide a sleeper compartment. It is equipped with two heaters and insulated with fibre glass. Extensive use of aluminum including gas tanks and dual-drive rear axles has decreased weight to 13,800 lb. The 35-ft trailer has a dual axle spring suspension which is completely rubber bushed. Featured is the trussed frame, steel head board and waterproof plywood panels. The weight of this unit is 11,600 lb.

## CLEAN A TRUCK IN 20 MINUTES

Model JO De Luxe

● REDUCE MAINTENANCE TIME ● CUT OVERHEAD  
● INCREASE PAY MILEAGE

Profit-minded fleet owners everywhere are reducing truck and bus "lay-up" time as much as 50% by Hyppressure Jenny Steam Cleaning motors, chassis, parts, etc., before servicing or repair. Time saved in the shop means increased road mileage . . . greater profits.

By removing caked road dirt and grease, Hyppressure Jenny Steam Cleaning lessens fire hazards . . . saves labor repair and maintenance time, and often prevents costly road failures by exposing worn or damaged parts before break-downs occur.

Besides these savings, Hyppressure

Jenny cleans garages, repair shops, equipment, tools, grease racks, runways, floors, walls, windows, etc., 10 times faster than they can be cleaned by hand.

#### WRITE FOR THIS FREE BOOKLET

#### "1001 Ways to Extra Profits."

It tells how Hyppressure Jenny will help you keep your fleet rolling and earning.



#### HYPPRESSURE JENNY DIVISION

HOMESTEAD VALVE MANUFACTURING COMPANY

Serving Since 1892

P. O. BOX 98

CORAOPOLIS, PA.

# AUSCO HYDRAULIC IS *duty caliber*

Just one look will tell you that these "big guns" of the AUSCO Jack line are *every inch HEAVY-DUTY CALIBER*.

*Every inch* of the Hydraulic Floor Jack, with its 134-pound solid steel chassis, is built for years of exceptional lifting duty. *Every inch* of the Hydraulic Curb Jack, with its 105-pound compact steel body, is built for extra maneuverability and quick on-the-spot servicing.

For smooth, dependable lifting power, you can't beat AUSCO's Hydraulic Axle Jacks. Exclusive "in-line" valve action starts the lifting operation instantly...simultaneous with the first stroke of

the handle to eliminate all lost motion and wasted "elbow grease." Let your helpful AUSCO Jobber show you how these Heavy-Duty Caliber Hydraulics can help you raise the caliber of your servicing operations. He carries a complete line of AUSCO Jacks for every heavy-duty service. See him today or write for latest AUSCO Catalog.

**AUTO SPECIALTIES MFG. CO., Dept CC-4, St. Joseph, Michigan**  
Other plants: Benton Harbor and Hartford, Mich.; Windsor, Ont., Canada

## AUSCO HYDRAULIC AXLE JACK

Ram assembly easily removed for servicing . . .  
exclusive patented base for "self-aligning" of load . . . "instant-flow" safety release screw . . . piston cup made of highest quality, non-wearing material.  
D-1501—1½ tons  
D-1511—3 tons  
D-1521—5 tons  
D-1531—8 tons  
D-1541—12 tons



# WEAR LIMITS of Axles, Brakes, Engine Parts

Continued from Page 66

**CONNECTING RODS**—Crankpin bearing bore and the piston pin bushing bore must be parallel with each other within .001 in. in 6 in., and the twist between these bores must not exceed .003 in. in 6 in.

**ROD BORE**: Must be round within .002 in. (c) Maximum out-of-round rods should not be used with maximum out-of-round crankpins.

**ROD BEARINGS**: Spread (width across the open ends) should exceed the rod bore diameter by .005 in. (d) to .020 in., depending on the thickness and structural stiffness of the bearings. The Ford V8 rod bearings are exceptions to this rule.

**CAMSHAFT BEARINGS**: After an engine has used up two sets of main and connecting rod bearings, the camshaft bearings are a potential source of trouble

due to wear and should be checked for possible replacement.

## Crankshaft End Clearances

FOR THE RODS, it is sufficient to be sure that the fillet at the ends of the crank pin does not bind on the end of the crank pin bearing. A clearance of .004 in. to .010 in. is recommended.

FOR THE CRANKSHAFT, end play or clearance is recommended as follows:

CRANKSHAFT JOURNAL DIAMETER	CRANKSHAFT END CLEARANCE
2 to 2 1/2	.004 to .006
2 13/16 to 3 1/2	.006 to .008
3 1/2 plus	.008 to .010

## Bearing Oil Clearances

The general rule for the size of the oil clearance, for pressure lubricated bearings, is to allow .001 for each inch of journal diameter, subject to modification depending upon the bearing metal alloy used, i.e.:

TYPE OF BEARING	SHAFT DIAMETERS
Lead and Tin	2" to 2 3/4" 2 13/16" to 3 1/2"
Base Babbitts	
Base Babbits	.0015-.0025 .0025-.0035
Cadmium	.002-.003 .003-.004
Copper Lead	.0025-.0035 .0035-.0045

Tolerances given by Cleveland Graphite Bronze are lower, as noted:

- (a.) Journals—.002 in.
- (b.) Bearing Saddle Bore—.001 in.
- (c.) Con Rods Bore—.001 in.
- (d.) Rod Bearings—.020 in.

## Valves

Data Provided by  
Thompson Products, Inc.

### Valve Seat Runout

Both the seat in the block or head, as well as the face of the valve itself should be checked by means of a dial indicator for runout. The valve seat should be concentric with the guide to within .0015 to .0025 total indicator reading. The valve face should be concentric with the stem to within .0025 to .003. Bent pilots and worn guides will give false readings. Replace guides not up to standard.

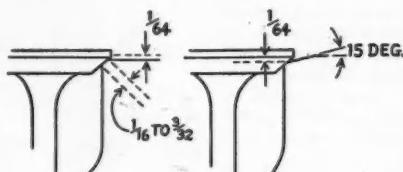
### Valve Seat Width

Valve seats will vary with engine design and operating conditions. For proper seat widths, it is always good policy to go to the engine builders' manual for recommendations.

Seat widths will vary from 3/64 in. to 1/8 in. for the ordinary automotive field.

On non-rotating installations, it is preferable to stay on the narrow limits of the engine builders' recommendation. Where rotating devices are used, wider seats will show improved performance.

Recommended valve seating procedure is shown below.

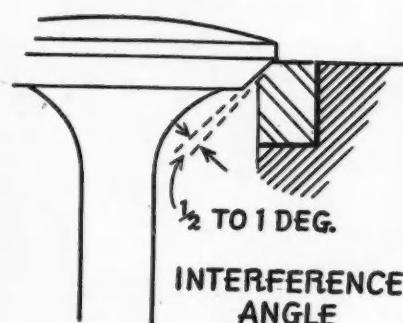


### Valve Seat Angle

For satisfactory valve performance, seat angles must be perfectly matched or fitted with an interference angle.

Angles should be checked by lapping and bluing to be sure they are mated.

For interference angle fit, see sketch below.



### Valve Stem Wear and Guide Clearance

STEM DIAMETER	CLEARANCE
5/16 in.	.002 .003
11/32 in.	.0025 .0035
3/8 in.	.003 .004
7/16 in.	.0035 .0045
1/2 in.	.004 .005

(TURN TO PAGE 216, PLEASE)

# TESTING TESTING TESTING

Day and night, around the clock, Pennsylvania's hills are the testing ground for MOLD-BLOK brake linings and blocks.

Under actual driving conditions, in all types of weather, the testing goes on with 21,000 pounds of G.V.W. Only the most modern equipment is used to prove the correct application for every truck, trailer or bus.

Is it any wonder why MOLD-BLOK is used with confidence on thousands of heavy duty units throughout the country? And is giving longer, more economical service under the most difficult conditions?

THIS IS PROVEN PERFORMANCE!

- NON SQUEAL
- LOWER COST PER MILE TO OPERATE
- UNIFORM CO-EFFICIENT OF FRICTION
- NON-SCORING OF DRUMS

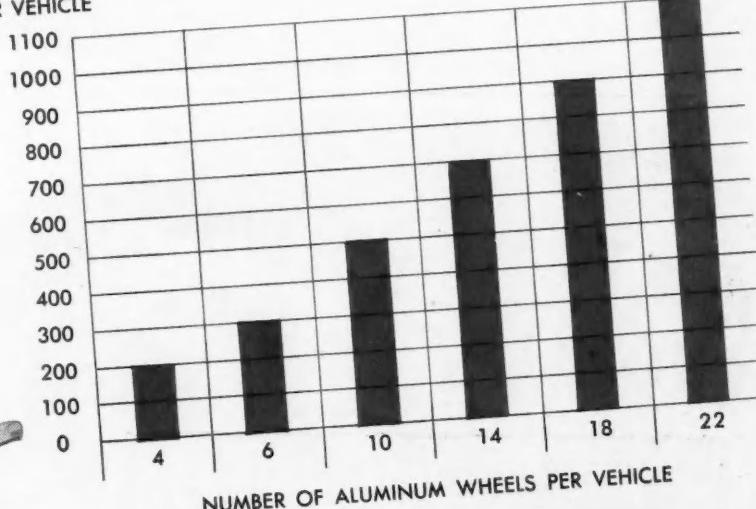


**MOLDED MATERIALS DIVISION**  
OF  
**CARLISLE CORPORATION**  
RIDGEWAY, PA.

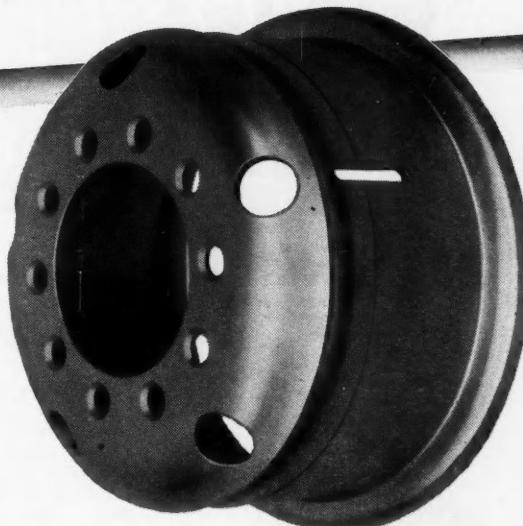
# FIGURE THE WEIGHT YOU SAVE with Alcoa Forged Aluminum Disc Wheels!



\*LBS. SAVED  
PER VEHICLE



\*Based on 7.50 x 22 wheels.



Weight-saving with Alcoa Forged Aluminum Disc Wheels adds up fast—and it's all *unsprung weight*! Each Alcoa Wheel weighs 32 to 50 lbs. less than a steel wheel. By specifying these light, strong wheels, you can save as much as 1,100 lbs. per vehicle—and add it to payload capacity.

Alcoa Forged Disc Wheels are precision-made to run true. Tire temperatures are lower, because the aluminum discs dissipate heat rapidly. Maintenance is almost nil. Wheels require no painting. Ordinary washing keeps them bright and attractive.

Ask your truck or trailer builder for facts and figures on Alcoa Forged Aluminum Disc Wheels. Available in 7.50 x 20 and 7.50 x 22 sizes.

*Send for free booklet!*

Gives full information on Alcoa Forged Disc Wheels—advantages, specifications, installation data. Write to ALUMINUM COMPANY OF AMERICA, 1870D Gulf Building, Pittsburgh 19, Pennsylvania.



## ALCOA FORGED ALUMINUM DISC WHEELS

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS  
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS



## Wear Limits

Continued from Page 214

If wear develops to a point where the clearance is 50 per cent greater than the specified maximum, replacement of the worn parts is recommended. (Wear readings should be taken at maximum bell mouth or taper.)

Valve stem warpage, up to .003 maximum indicator reading, is permissible. Wear on stem tip up to 1/32 in. is usually permissible.

Recommended Press Fits					
O.D. OF SEAT INSERT	DEPTH OF INSERT				
	1/4—3/8	3/8—9/16	9/16—11/16	Max. Min. Desired	Max. Min. Desired
1 in.—2 in.	.004 .002 .003	.005 .003 .004	.006 .004 .005		
2 in.—3 in.					
3 in.—4 in.					

## Valve Springs

Valve springs should always be checked for tension on any accurate testing device. Springs, having a compression reading 10 per cent below the low limit specification, should be replaced.

Installations, where the valves have been lowered on the seat due to grind in the installed spring height, should be checked.

Variations in excess of .020 should be taken up with washers to keep spring pressures in the proper range.

When springs are removed, it is good practice to thoroughly clean them and examine the wire surface. Any signs of corrosion would indicate that they should be discarded.

## Valve Seat Inserts

For best performance, the recess for valve seat inserts should be bored smooth; square and flat on the bottom.

The sizes should be measured accurately to give the interference fit as shown here. Too much press fit causes just as much trouble as too little. Likewise, accuracy is a prime requisite.

## Service Brakes

Information provided by U. S. Asbestos Div. of Raybestos-Manhattan, Inc., and Thermod Co.

The following working limits for better operation and care of Lockheed, Huck, Bendix and Two-shoe cam operated brakes, are recommended:

## Brake Drums

Do not cut drum wall on cars, light trucks, heavy trucks and busses more than 20-25 per cent of manufacturer's original thickness. When drums are heavily loaded, caution should be used in cutting down drum thickness due to squeal and distortion problems. Thickness refers to drum body only and does not include flanges or ribs. Drums should be discarded if deflection in diameter is more than .060 in. under full brake application. Diameter should be concentric with hub within .010 in.

**SURFACE**—Refinish if heat checked or scored more than .010 in. deep.

**TAPER**—Refinish if barrel shaped or bell-mouthed more than .010 in.

**SHIM STOCK** or oversize lining should be used to compensate for material removed from drums.

## Brake Shoes

**ANCHOR ENDS**—Bendix shoes should be repaired or replaced if anchor radius is enlarged or bent.

**RIM**—Shoes should be repaired or replaced if rim is out of round, out of square or distorted.

**WEB**—Shoes should be repaired or replaced if rim to web weld is broken as this causes excessive rim flexing resulting in uneven lining wear.

**ROLLERS**—Discard rollers that are worn, particularly if a flat spot is present on outside. Discard cam follower plates if grooved by the cam more than .015 in.

## Bushings

**ANCHOR BUSHINGS** should be replaced if worn more than .008 in. Anchors should be fitted and bushings accurately reamed.

## Anchors

**PINS**: Anchor pin on the Huck brake is non-adjustable type, renew anchor if worn more than .008 in. On the two-shoe cam operated brake and the Lockheed brake, renew anchor pins, or rebush shoes if worn more than .008 in.

## Links

**ARTICULATING LINKS** must be rigid and hold the shoes without side play. Examine buttons and button springs and renew if bent or worn. Applies to Huck brake only.

## Springs

All weak pull back springs should be replaced.

## Cam

On the two-shoe cam operated brake, camshaft should be renewed and bracket rebushed if worn more than .025 in.

## Backing Plate

Repair or replace warped, bent or loose backing plates. Lubricate backing plate ledges.

## Hydraulic Systems

**WHEEL CYLINDERS**—Dismantle and examine at each reline or if leaks are present. Renew pistons if scored, sticking or worn more than .005 in. Cylinder walls should be honed if scored. If, after honing enough to remove all scores, the "no-go gauge" will enter, wheel cylinder should be replaced. Renew all rubber cups.

## Master Cylinders

**CHECK VALVE**—Residual line pressure should be 7 to 12 lbs. per sq. in. Renew check valve if spring is rusty or seats are worn in spring type, or if rubber cup or rubber seat are worn or distorted in metal cage type.

**PRIMARY AND SECONDARY CUPS**—Replace cups if distorted or edges are rounded.

**MAIN SPRING**—Replace spring if weak or rusty.

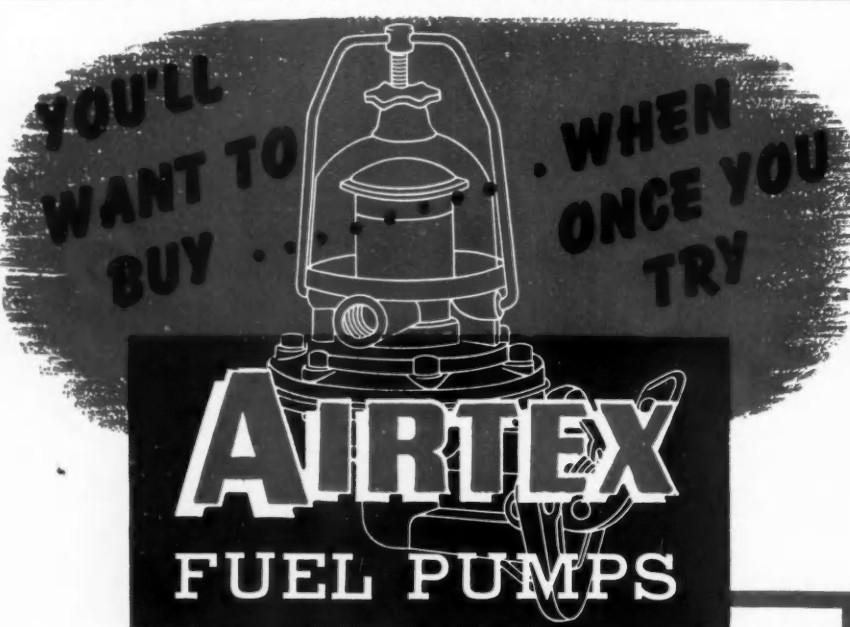
**PISTON**—Renew if scored or worn more than .005 in. Make sure ports and filler cup vents are open.

**CYLINDER WALLS** should be honed if scored. If, after honing enough to remove all scores, the "no-go gauge" will enter, master cylinder should be replaced.

## Brake Lining

**LINING** should be replaced when worn within .010 in. of rivet head on passenger cars and light trucks and within 1/32 in. of bolt head on heavy trucks and buses. In the case of bonded linings, which are rapidly coming into the picture, lining should be replaced when worn to a minimum of .020 in.

(TURN TO PAGE 218, PLEASE)



### AIRTEX

Anti-Pulsation  
FUEL FILTERS  
with the  
SHOCK ABSORBER  
DIAPHRAGM



- Protects carburetor needle valve and float lever against wear
- Makes frequent carburetor adjustments unnecessary
- Gives smoother operation at idle and low speeds

### 50,000-MILE GUARANTEED DIAPHRAGM

- Won't crack, puncture, become porous or brittle
- Stays flexible through engine heat and fumes
- Withstands -35° temperature without stiffening
- Means quicker starting, less battery drain, fewer stalls, faster get away, longer life.



### PATENTED VALVE CAGE ASSEMBLY

- Eliminates internal gasket — prevents leakage caused by gasket wear
- Gives perfect seal between valve and body
- Provides instant, ample fuel flow to carburetor without back tracking





# YOU CAN'T LOSE! IN BONNEY'S \$5000.00 MECHANICS' JACK-POT

THE EASIEST WAY TO MAKE MONEY  
YOU EVER HEARD OF!

1507  
PRIZES

The MECHANICS' JACK-POT is a different kind of contest. Absolutely no purchase is required to enter—no box tops, no coupons. (You don't even have to be an owner of Bonney Tools!) All you have to do is complete this sentence in 25 words or less:

#### "I PREFER BONNEY TOOLS BECAUSE..."

Your chance of winning is every bit as good as the next fellow's. Just read the rules, complete the entry blank attached to this ad, and mail it to MECHANICS' CONTEST, BONNEY FORGE & TOOL WORKS, P. O. BOX 831, ALLEN-TOWN, PA. The important thing is to *send in your entry now.*

#### READ THESE RULES CAREFULLY

1. The contest is open to all mechanics and mechanics' helpers in the continental United States.
2. The following are not eligible: employees of Bonney Forge & Tool Works and members of their immediate families; employees of any Bonney sales organization, distributor or jobber; employees of the Bonney Forge & Tool Works' Advertising Agencies.
3. All entries must be postmarked *not earlier than March 1, 1950 and not later than May 31, 1950.* Address your entry to: Mechanics' Contest, Bonney Forge & Tool Works, P. O. Box 831, Allentown, Pa.
4. The entries will be judged for originality and aptness of thought. Duplicate prizes will be awarded in case of ties. The decision of the judges will be final. Entries will not be returned, and all become the property of Bonney Forge & Tool Works.

NO COUPONS  
NO BOX TOPS  
NO CATCHES

#### ...GET IN THE CONTEST EARLY

5. Contest winners will be notified by letter no later than June 30, 1950. Winner lists will be available on request to contestants who send in stamped, self-addressed envelopes.
6. Each contestant is limited to one entry. If more than one is sent in, only the first entry received will be considered.

#### YOU CAN WIN ONE OF THESE BIG PRIZES

First prize.....	\$1000.00	Fourth prize.....	\$100.00
Second prize...	500.00	Fifth prize.....	50.00
Third prize.....	100.00	Sixth prize.....	50.00
Seventh prize....	\$50.00		

- ... PLUS 100 prizes of \$15.00 Tool Purchase Certificates  
... PLUS 400 prizes of \$11.00 Zenel Open End Wrench Sets  
... PLUS additional prizes of Bonney Tie Clasps for the next 1000 best entries.

ENTRIES MUST BE POSTMARKED NOT LATER THAN MAY 31st

Enter  
Now

#### OFFICIAL ENTRY

BONNEY FORGE & TOOL WORKS  
P. O. Box 831, Allentown, Pa.

#### MECHANICS' JACK-POT CONTEST

"I prefer Bonney Tools because.....

NAME.....

..... Street ..... City ..... State .....

I work at.....  
My Bonney Jobber is.....

In order to help your Bonney Jobber Salesman participate in this contest, ask him to help you with your entry statement and, if he does help you, enter his name here.....

**BONNEY**  
TOOLS

BONNEY FORGE & TOOL WORKS

ALLEN-TOWN, PENNSYLVANIA

## Eaton Front and Rear Axle

The axle division of Eaton Mfg. Co. has submitted valuable information on wear limits for its line. The data covering both front and rear axles will be found in the table below.

Dimensions given are a fair average of the entire line

PARTS	SPECIFIED FIT OF CLEARANCE	SERVICEABLE AFTER WEAR
Gear mesh, bevels—backlash	.008 to .015	.018
Herringbone mesh—backlash	.010	.015
Gear mesh—differential backlash	.010 max.	.015
Bearing fit—cones where free—Pinion End	.001 loose to .005 tight	.002
Bearing fit—cones where free—Housing Tube	.0002 to .0017 loose	.002
Bearing fit—cones where free—Front Axle inner wheel brg.	.0005 to .0015 loose	.002
Bearing fit—cones where free—Front Axle outer wheel brg.	.0005 to .002 loose	.003
Bearing fit—cup where free—Diff. Brgs. L.H. and R.H. Side	.005 tight to .015 loose	.002
Differential side pinion and spider	.002 to .004 loose	.006
Side gear in differential case	.004 to .007 loose	.009
Internal gear idler pinion and pins	.0045 to .0065 loose	.009
King pin fit in I-beam	.000 to .0015 loose	.002
King pin fit in Knuckle bushings	.0005 to .002 loose	.003
Differential washers back of gear	.002 loose to .006 loose	.010

## Wear Limits

Continued from Page 216

### Brown-Lipe Clutch

#### Pressure Plate

Maximum free movement in driving slots—.015  
Maximum fulcrum wear— $1/32$   
Maximum depth of scores which permit salvage by re-grinding— $1/16$   
Maximum depth of scores permitting reinstallation without grinding—.005  
Maximum out-of-flat permissible without regrounding—.007

#### Levers

To be scrapped if contact areas are pitted or grooved.

#### Release Sleeve

To be scrapped if total wear where levers contact is over— $1/32$   
Clearance between bushing and shaft—maximum—.007

#### Spring

Per cent load loss permissible before scrapping—20%

#### Driven Plate

Replace if oil or grease on surface.  
Replace when worn to rivet heads.  
Replace if burned.  
Maximum play in disc splines measured at periphery— $1/8$   
If excessive spline wear occurs, check alignment between transmission and engine.  
Maximum free play at periphery due to damper parts— $1/16$   
(Scrap disc if more)  
Permissible warpage:  
(Use indicator) face runout—.010

#### Cover (Flywheel Ring)

Maximum total freedom of pressure plate in slots—.015

#### Release Bearing

Grease—High Temperature—B. & RB.  
Adjustment—by turning castellated adjusting ring to correct free pedal travel.

#### Clutch Release shaft

Maximum play in bushings—.015

END

Please Resume Your Reading on P. 67

#### Sterling Cab-Forward



Designed primarily for those operations requiring reduced overall lengths, this Sterling TE cab-forward truck has its engine projecting part way into the cab assembly. The front axle is therefore located farther forward in relation to the cab. The engine housing, which is easily removed, is well insulated from the cab. Featured is an adjustable steering column which enables the wheel to be set in any position comfortable to the driver.



**HOOF** key and seal type  
**GOVERNORS**

**HOOF PRODUCTS CO.**  
6543 S. Laramie Ave., Chicago 38, Ill.

A Patented, exclusive Hoof feature, this Cantilever Spring means more accurate speed control, simplified construction and longer life!



# UNIFORMITY

*Makes the Big Difference*

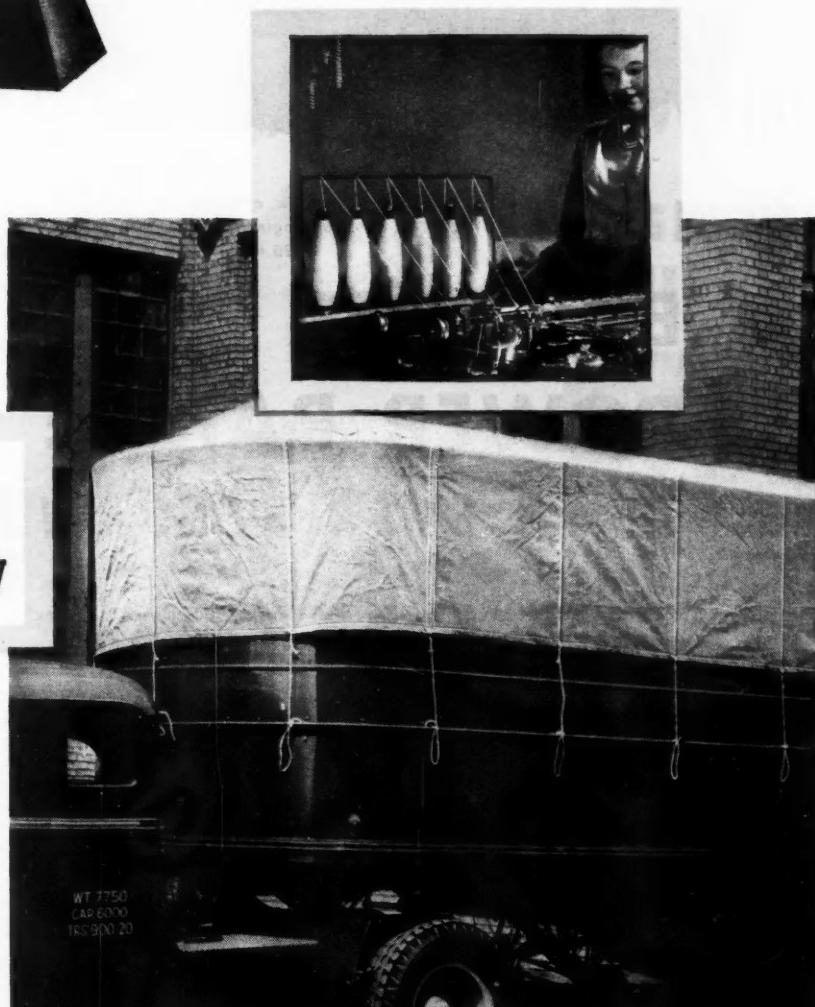
## In TRUCK COVER Fabrics

TESTING STRENGTH AND ELONGATION OF YARN WITH MOSCROP TESTER. This unit automatically tests 6 strands of yarn at one time. One of a series of comprehensive laboratory controls throughout production to assure fabric uniformity in all Mt. Vernon-Woodberry products.



*Gives You*  
Greater Fabric Uniformity

The greater uniformity of Mt. Vernon Extra Duck—the straight, smooth, weather-tight seams made possible by its even selvages — mean added cargo protection, longer wear, lower repair and replacement costs.



**Mt. Vernon-Woodberry**

Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

**TURNER HALSEY**

COMPANY

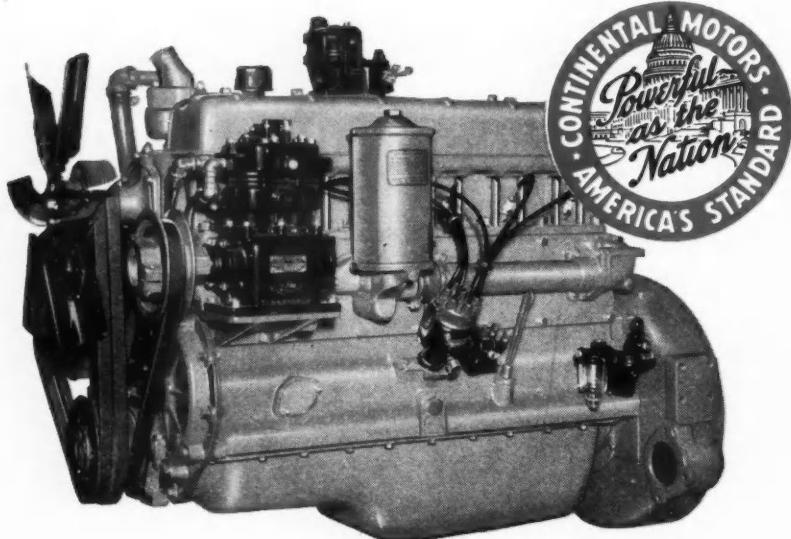
Selling Agents

40 WORTH ST. • NEW YORK

**Mills**

Akron

# CONTINENTAL RED SEAL ENGINES



MODEL T-6427

**NOW COVER A  
BROADER  
POWER RANGE  
THAN EVER BEFORE!**

Continental Motors has not only embodied in Red Seal engines numerous improvements developed since the war, but has also substantially broadened an already diversified line. That line now comprises more than 100 different models from 1½ to 270 horsepower, for transportation, industrial, and agricultural use—each engineered to do one job, and do it supremely well. As a result, the manufacturer—and the user—of everything from a lawn mower to a heavy-duty highway tractor will find in the Continental line one or more models precisely matching his need. This tailoring of the power plant to the work to be performed is the best possible assurance of satisfaction over the years.

*Write for free bulletins on Continental Red Seal engines. Kindly mention application you have in mind, and approximate power required.*

---

***Continental Motors Corporation***  
MUSKEGON, MICHIGAN

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## AASHO Standards

Continued from Page 121

4. Speed: (a) Minimum speed. No motor vehicle shall be unnecessarily driven at such slow speed as to impede or block the normal and reasonable movement of traffic. Exception to this requirement shall be recognized when reduced speed is necessary for safe operation or when a vehicle or combination of vehicles is necessarily or in compliance with law or police direction proceeding at reduced speed.

(b) Maximum speed: No truck shall be operated at a speed greater than 45 mph. Passenger vehicles may be operated at such speeds as shall be consistent at all times with safety and the proper use of roads.

(c) Vehicles equipped with solid rubber or cushion tires shall be operated at a speed not in excess of 10 mph.

5. Permissible Loads: (a) No axle shall carry a load in excess of 18,000 lb. (Note: An axle load shall be defined as the total load transmitted to the road by all wheels whose centers may be included between two parallel transverse vertical planes 40 in. apart, extending across the full width of the vehicle.)

(b) No group of axles shall carry a load in pounds in excess of the value given in the following table corresponding to the distance in feet (col. a.) between the extreme axles of the group, measured longitudinally to the nearest foot:

(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
4	32,000	17	41,160	31	53,490	44	63,890
5	32,000	18	42,080	32	54,330	45	64,650
6	32,000	19	42,990	33	55,160	46	65,400
7	32,000	20	43,900	34	55,980	47	66,150
8	32,610	21	44,800	35	56,800	48	66,890
9	33,580	22	45,700	36	57,610	49	67,620
10	34,550	23	46,590	37	58,420	50	68,350
11	35,510	24	47,470	38	59,220	51	69,070
12	36,470	25	48,350	39	60,010	52	69,790
13	37,420	26	49,220	40	60,800	53	70,500
14	38,360	27	50,090	41	61,580	54	71,200
15	39,300	28	50,950	42	62,360	55	71,900
16	40,230	29	51,800	43	63,130	56	72,590
		30	52,650			57	73,280

(c) The maximum axle and axle-group loads recommended above are subject to reasonable reduction in the discretion of the appropriate highway authorities during periods when road subgrades have been weakened by water saturation or other cause.

(d) The operation of vehicles or combination of vehicles having dimensions or weights in excess of the maximum limits herein recommended shall be permitted only if authorized by special certificate issued by an appropriate State authority.

### Easy Does It



Operated from control on the dash, installation of twin-cylinder hydraulic hoist, manufactured by the National Truck Equipment Co., converts Willys pickup into a dumper



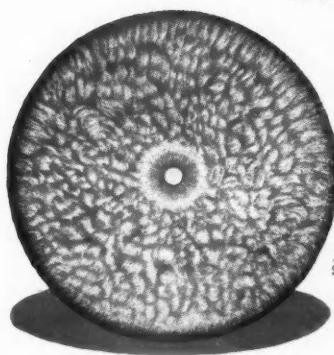
**NOW** *No unbalanced operation—no swirls—just EXCEPTIONAL POLISHING*

**Speed . . ease . . reduced costs . .**

**greater profits in polishing, rubbing and waxing**

**with**

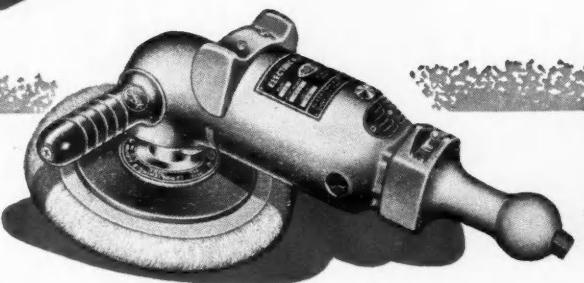
**Sioux POLISHING UNITS**



**SIOUX Polishing Pad  
No. 1211**

Deep, thick, tough, long lasting wool nap. Strong canvas back. Hole in center for centering and clamping on holder—eliminates unbalanced operation and swirls—special feature. A wonder on patch work, blends new with old, completely hiding patch. Produces a superior finish on all polishing, rubbing or waxing.

No. 843 Wool Bonnet same as No. 1211 except bonnet type.



**SIOUX Electric Polisher**  
No. 1200 gives correct speed—long life—dependable service. For easy and quick results get SIOUX.

Permanently lubricated—115 Volt A.C., D.C. Motor. Comes complete and ready to go to work.



**SIOUX Auto Polish**

For machine or hand polishing. Quickly cleans all surfaces and polishes in one operation. Restores original finish without injury to it or fine striping. Contains no injurious ingredients. Our own scientific formula—based on years of research.

**Sold Only Through**

**Authorized SIOUX Distributors**

**STANDARD THE  
ALBERTSON & CO., INC.**



**WORLD OVER  
SIOUX CITY, IOWA, U. S. A.**

## New Product Descriptions

Continued from Page 49

### P103. Saddle Tank

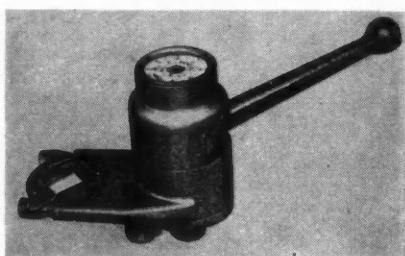
The 1950 Model Cylsad—combination cylinder-saddle tank consists of two complete cylinder tanks joined together with a rugged saddle section. This standard tank combination includes gage ports for Stewart-Warner gages if desired. Diesel engine fuel line connections are provided, making it pos-

sible for a distributor to supply the Cylsad for diesel operation without carrying multiple stocks.

The tank combination can be filled from either side. Safety valve is included in each cap together with fusible element area for additional safety. The unit is available in 85, 105, 125, 145, and 180-gal capacities. The Lintern Corp., Berea, Ohio.

### P104. Hand Control Valve

A vacuum-suspended type hand-control valve, for steering post installation incorporates a single poppet valve with a resilient valve seat face. It provides a leak-proof action and insures positive graduation and settings. The



operating cam bearing surfaces are faced with hardened steel. The valve assembly is protected from dust by a built-in air cleaner.

The optional vacuum gage is located on top, within easy view of the operator. When the gage is supplied, it is an integral part of the valve housing. Bendix Products Div., Bendix Aviation Corp., South Bend, Ind.

# Factory Installed

At "factory installed" prices you get this Bostrom Hydraulic Seat, the ultimate in truck seating, at lowest cost.

In These Trucks:  
International • GMC  
Diamond T • Peterbuilt • Dart  
Federal • Walter • Oshkosh • Duplex  
Ward La France • Coleman • Reo  
Hendrickson • Sterling  
Available • FWD

**BOSTROM**

**HYDRAULIC** shock absorber and suspension mechanism of the Bostrom seat soak up jolts and jars. Steel frame and bonded rubber pad last the life of the truck. Mechanism moves in rubber—requires no oiling. Fore and aft adjuster accommodates all drivers. Seat coverings are replaced in 10 minutes—eliminating upholstery jobs.

For truck part numbers consult your truck dealer or write:

**BOSTROM MFG. CO.**

Milwaukee 4, Wisconsin

Costs a little more  
at the start...  
costs a lot less in  
the long run.

### Late Product Flashes

A head cutter that cuts the head of any size steel drum in approximately one min, recently introduced by Michael A. Schinker Co., Chicago, Ill.

Exhaust fans, 16-in., 20-in. and 24-in. sizes, featuring large capacity for each blade size, developed by the Baldor Electric Co., St. Louis, Mo.

Korodicators, designed to eliminate the corrosion formed on battery posts, now manufactured by the Korodicator Div. of the Knight Machine and Tool Corp., Cleveland, Ohio.

The Yankee No. 235 truck fender mirror with diminishing glass, introduced into the complete line of automotive safety equipment of the Yankee Metal Products Corp., Norwalk, Conn.

A new type lineless replacement oil clarifier for use on buses, trucks and tractors equipped with base-mounted oil filters, developed by W.G.B. Oil Clarifier, Inc., Kingston, N. Y.

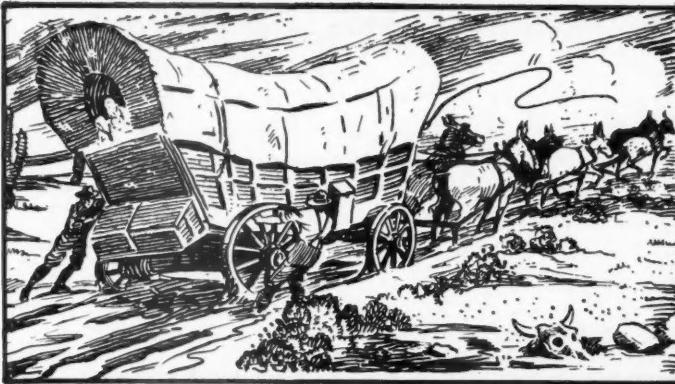
A new assortment of water pump gaskets added to the line offered by the McCord Corp., Detroit, Mich.

Three models of bench and hand tubing benders, covering a range from  $\frac{1}{4}$  in. to  $\frac{1}{2}$  in., offered by the Republic Mfg. Co., Cleveland, Ohio.

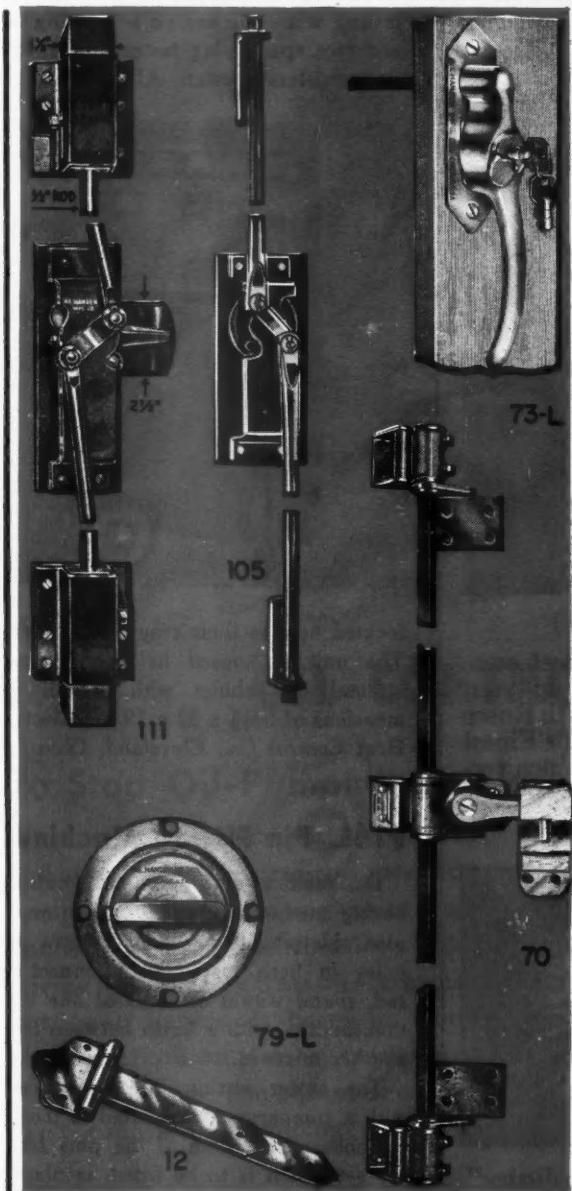
### P105. Ignition Cut-Off

A new, fully-automatic ignition cut-off switch, shuts off truck, bus, taxicab, and other vehicle engines after two minutes' idling; thus saving gas and

(TURN TO PAGE 224, PLEASE)



## MILESTONES of PROGRESS



**B**ACK in the "early days"—1920—Hansen made only a few designs in locks, hinges, handles and regulators. Now—a full thirty years later—the Hansen Line is complete — varied to suit every body-building requirement.

Tanks, trailers, buses, bodies—from coast to coast—pile up mileage and carry their loads, safely, speedily — with doors fastened securely against loss or theft. Most of them are Hansen-equipped.

Always the "preferred" hardware, because of its simple design, ruggedness, durability, ease of application — Hansen has stood the test of service and of progress thru the years.

If you are a custom body builder or designer; if you are a fleet owner or operator and have a body building specialist build your bodies, tanks, trailers or buses—it will pay you—in longer service, fewer repairs or replacements — to specify and use HANSEN!

### Specifications for Items Shown

No. 12 Leaf-Type Hinge. Size, 12" strap,  $\frac{3}{4}$ " wide. Three-ply. Steel. Hardened bearings.

No. 70 Lock. Lug-leverage compresses doors tight-shut. Std. rod, 48",  $\frac{5}{8}$ " square. Right- or left-hand.

No. 73-L Locking Handle. Tamper-proof,  $\frac{5}{16}$ " square bushing and shank. Handle, 7" long;  $\frac{4}{5}$ " grip.

No. 79-L Handle. Fits flush. Round recess to prevent "barked" knuckles. 6  $\frac{3}{16}$ " wide. Flange,  $\frac{3}{4}$ ",  $\frac{41}{2}$ " recess.

No. 105 Lock. For doors up to  $5\frac{1}{2}$ ". Rattle-proof. Two rods, 30" long,  $\frac{3}{8}$ " dia. Center,  $2\frac{1}{2}$ " wide,  $\frac{6}{13}$ " long.

No. 111 Lock. Heavy duty. Center bolt,  $2\frac{1}{2}$ " wide. Top and bottom bolts,  $1\frac{1}{2}$ " wide with  $1\frac{1}{2}$ " travel. Rods,  $\frac{1}{2}$ " dia.



**A. L. HANSEN MFG. CO.**  
5047 RAVENSWOOD AVE., CHICAGO 40, ILL.

## New Product Descriptions

Continued from Page 222

reducing maintenance. It also prevents carbon monoxide poisoning which occurs when driver sleeps while engine is idling. A safety feature is the built-in "tilt-switch," that helps prevent fires by instantly cutting the ignition if vehicle is ditched or turned over.

This switch goes into operation only when accelerator is at full-off position.

This permits driver to idle engine for warmup or other necessary reasons, but only when he remains in cab to step on accelerator at intervals. The unit is pre-set at the factory for two minutes' idling time, but can be re-set by a mechanic to allow for any desired idling period. Transportation Safety Appliances, Inc., Chicago, Ill.

### P106. Brake Reliner

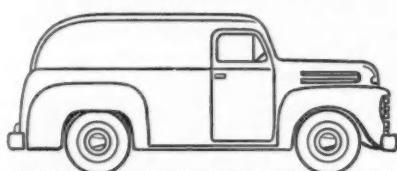
An all-purpose heavy-duty brake reliner features a double column with separate delining and riveting stations, as well as a foot-operated driller and swivel driller grinder. This machine has a riveting throat 7-in. deep and is equipped with 6½-in. or 7½-in. rubber-cushioned abrasive. Chicago Rivet & Machine Co., Bellwood, Ill.

### P107. Engine Tester

Designed for use on 6, 12 and 24-volt ignition systems, the MT-830 King System tester features well illuminated meters, provisions for over-all ignition testing while the engine is running, an accurate spark plug tester and a volt-amp-resistance tester. All controls are

**Now Rusco  
Fused Fabric  
Brake Lining  
is available for...**

**FORD and**



½ ton to 2 ton

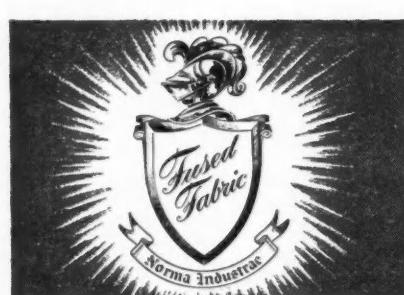
**CHEVROLET**



½ ton to 2 ton

**THE RUSSELL MANUFACTURING COMPANY**

Middletown, Conn.



"The Standard of the Industry"

located next to their respective meters. The unit is housed in an attractive streamlined cabinet with overall dimensions of 56½ x 32 x 19 in. Electric Heat Control Co., Cleveland, Ohio.

### P108. Pin Fitting Machine

Designed to employ the fly cutting boring method for the fitting of wrist pins, this pin fitting machine bores pin holes in both piston and connecting rod, round within one-half of one thousandths, with a finish between four and six micro-in.

The cutter setting is accomplished with a comparator, graduated in tenths of thousandths. One of the pins from the set which is to be fitted, is placed in the chrome-plated vee of the comparator and the knurled knob set at zero. The pin is then removed. The boring bar, with the cutter locked with a friction lock, is then placed in the vee.

(TURN TO PAGE 226, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1950

## SELF-CONTROL STARTS HERE



AND TO RESTORE  
ENGINE PERFORMANCE

## OIL-CONTROL STARTS HERE

### To Stop Oil-Pumping, Replace Worn Engine Bearings

When an engine is sluggish on pick-up and always seems to drag that means oil pumping—and oil pumping means worn connecting rod and main bearings. Worn engine bearings let excess oil reach combustion chambers. It burns to motor fouling carbon on pistons, spark plugs, valves and rings. The best of new rings can't control oil pumping caused by

worn bearings. Correction starts where the trouble starts. Always check for and replace worn bearings. To restore power, pep and economy, replace in sets with Federal-Mogul Oil-Control Bearings. They are engineered for the job!

**FEDERAL-MOGUL SERVICE**  
(Division of Federal-Mogul Corporation)  
**DETROIT 13, MICHIGAN**



*control oil-pumping where it starts—REPLACE WITH*

# FEDERAL-MOGUL

OIL CONTROL  
BEARINGS

## New Product Descriptions

Continued from Page 224

The cutter is then forced out to the proper reading to accomplish a cut with the specified clearance, or press fit, for the particular job. All centering and holding is accomplished with regulator controlled pneumatic pressure, and the feed is actuated by air and stabilized by oil.

The Tobin-Arp Mfg. Co., Minneapolis, Minn.

### P109. Hand Truck

The Tricart, a light-weight tubular steel hand truck complete with adjustable tripod support and leverage plate. Weighs but 27 lb, and will handle loads up to 600 lb, because of the added strength supplied by the tripod support. Loads are broken back by stepping on the end of the leverage plate.

The telescoping tripod is adjustable instantly to any position for maximum ease of wheeling. The entire third wheel assembly can be folded completely out of the way, to permit use of the truck as a two-wheeler, whenever desired. Melooz Mfg. Co., Los Angeles, Cal.

### P110. Brake Shoe Sander

Model BSU brake shoe sander removes old bonded lining rapidly, trues the shoe, and leaves a bright clean surface with the correct degree of



### He's the Type Who Would Complete an Overhaul Job WITHOUT MAGNAFLUX\* INSPECTION

**ANCHOR LOST! FISHING SPOILED!** It happens often but shouldn't happen to you. Neither should drive shaft, steering, or block failure or structural failure of any other part occur shortly after you complete an overhaul job. Failure

doesn't occur when fast, non-destructive Magnaflux inspection is used to check every part.

Leading railroad shops and aircraft overhaul stations use Magnaflux regularly. And so do many bus and truck operators.



Invisible to the naked eye, this otherwise invisible fatigue crack in bus drive shaft shows up clearly as shown here under Magnaflux inspection. Undetected it could have failed completely shortly after overhaul.



Magnaflux inspection shows clearly the area, size and shape of defects in these connecting rods. Without Magnaflux inspection the entire overhaul would have to be redone within a few days or weeks.

Write today for complete information about Magnaflux inspection and how it can save you time and money on overhaul jobs. Be sure to check on the shop convenient to you, who can Magnaflux your mechanical parts during overhaul.



\* Magnaflux—Reg. U. S. Pat. Off., Trade Mark of the Magnaflux Corporation applied to its equipment and materials for magnetic particle inspection.

**MAGNAFLUX CORPORATION**  
5908 Northwest Highway, Chicago 31, Illinois  
New York • Cleveland • Detroit • Dallas • Los Angeles  
Export Distributor: Curtis Wright Corp. In Canada: Williams & Wilson, Ltd.

roughness to assure perfect bonding of the new lining. It handles shoes of all types, ranging from 8 to 18 in. in diameter and up to 4 in. wide. A coarse grit belt is used to remove the old lining, bonding cement, rust and grease. A fine grit belt is then used to clean and smooth the bare shoe. A dust collector is provided and a special pipe connection is furnished for use with a vacuum unit. Lempco Products, Inc., Bedford, Ohio.

### P111. Rinsable Paint Remover

A new water rinsable paint remover specially designed for removing finishes from metal surfaces, is effective on lacquer, enamel and synthetics; also on baked enamel and Zinc Chromate primer. It is applied with a brush and does not harm the brush.

The remover penetrates the finish, forming a soft mass, that can be flushed off with water, using a hose. The softened finish may also be removed with a stiff bristle brush or steel wool dipped in water, or with a putty knife or scraper. No wash-up is needed after the finish has been removed because it leaves no oily film or waxy deposit. The Wilson-Imperial Co., Newark, N. J. (TURN TO PAGE 229, PLEASE)

# New Product Descriptions

Continued from Page 226

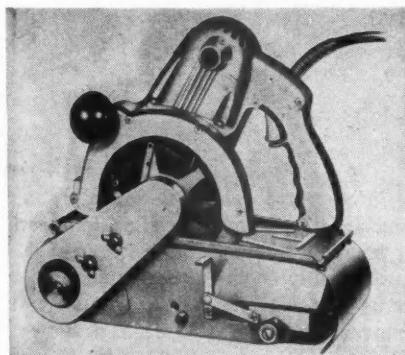
## P112. Door Operator

An improved direct gear drive electric door operator called the Y-M CHIEF equipped with automatic safety switch is designed for overhead and single sliding or double parting doors. Switch breaks motor contacts when the closing doors touch any obstruction. The safety control automatically resets itself.

Use of a high strength aluminum alloy frame combined with machined cast iron parts have been designed to reduce weight of the door operator to provide easy installation with long, maintenance-free operation. The Y-M CHIEF is furnished with ball bearing-type electric motors of capacities to handle normal door requirements up to 200 sq. ft. Yoder-Morris, Inc., Cleveland, Ohio.

## P113. Sander-Saw

Model 650 Sander-Saw, a 4-in. belt sander quickly convertible into a 6-in. portable saw, weighing 18 lb, does any kind of surfacing job from cutting with the saw to roughing-out with coarse sanding belts, to a ripple free finish



when used as a final finishing tool. The belt is held under constant spring pressure and a tension latch provides for a quick belt change. Cummins Portable Tools, Chicago, Ill.

## P114. Pallet Truck

New, shorter, lighter 12- or 18-volt pallet trucks, with an automotive-type, internal expanding brake are now on the market.

The new Moto-Truc pallet truck is only 23 1/4 in. longer than the load—for operating in smaller spaces. The easy-grip, roller-type handle controls two

speeds forward and two speeds reverse. Electric pump is located on top of truck for accessibility.

The brake is mounted on the side of the drive wheel as an integral part. Two internal expanding, self-synchronizing, vulcanized-lined brake shoes inside a cast Meehanite drum provide smooth, positive brake action under all

load and floor conditions. The Moto-Truc Co., Cleveland, Ohio.

## P115. Decal Sets

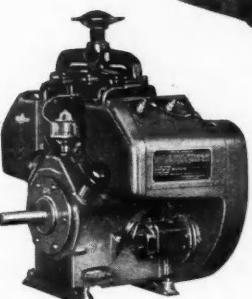
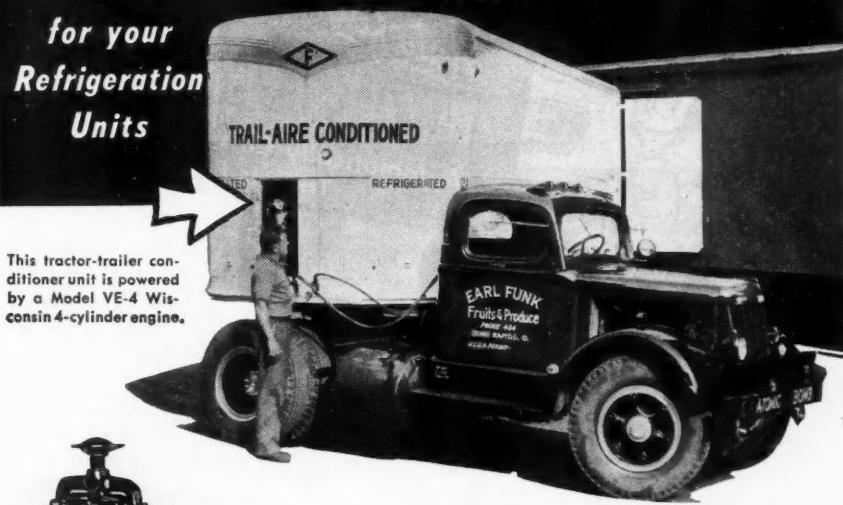
Three new decal sets for positive selection of three types of extinguishers for fires of 1) wood, paper, rubbish; 2) electric, gas, chemical; and 3) of any origin except electrical, help to identify and locate the proper fire extinguisher in a hurry.

A large decal is supplied for application  
(TURN TO PAGE 230, PLEASE)

## Give a Thought to WISCONSIN Heavy-Duty Air-Cooled ENGINES

for your  
Refrigeration  
Units

This tractor-trailer conditioner unit is powered by a Model VE-4 Wisconsin 4-cylinder engine.



Body builders, refrigeration engineers and fleet owners alike, who are familiar with Wisconsin Heavy-Duty Air-Cooled Engines, have a keen appreciation of such advantages as:

**DEPENDABLE AIR COOLING.** No cooling problems at any temperature from sub-zero to maximum summer or tropical heat.

**COMPACT DESIGN.** Wisconsin Engines are readily adaptable to available space allocations without sacrificing payload area. V-type design of 4-cylinder models assures an extremely compact power package.

**HEAVY-DUTY SERVICEABILITY.** The crankshaft of every Wisconsin Engine carries Timken self-cleaning Tapered Roller Bearings at both ends to take up end thrusts and radial loads, permitting direct drive from the extended crankshaft without need for a separate thrust or outboard bearing. We have yet to hear of a single case of Wisconsin Engine bearing failure.

**ROTARY TYPE, HIGH TENSION OUTSIDE MAGNETO,** equipped with Impulse Coupling, for smooth, steady ignition, easy starting in any weather, and minimum servicing.

Wisconsin engineers will be glad to work with you in planning your Refrigeration and Conditioner Power installations. Let us have a look at your blueprints and specifications and see what we can come up with.



**WISCONSIN MOTOR CORPORATION**

World's Largest Builders of Heavy-Duty Air-Cooled Engines  
MILWAUKEE 14, WISCONSIN

## New Product Descriptions

Continued from Page 229

cation to the wall above the fire extinguisher, and a smaller one for the extinguisher itself. The new decals identify by color code, design, and by printed instructions naming proper use.

The sign for fires of wood, paper, or rubbish origin has black and yellow diagonal bars. For electric, chemical

or gas fires, the identifying design has red and white horizontal bars.

Red and white horizontal bars cut diagonally by a combination yellow and black stripe, identify foam type fire extinguishers, which are suitable for any but electrical fires. Meyercord Co., Chicago, Ill.



\* SPEEDS SERVICE

\* MORE "FILL-ER-UPS"

\* FULL TANKS - NO SPILL

When the gasoline reaches the tip of the Imperial nozzle tube a definite throb in the hand valve signals the operator to release the hand lever thus stopping the flow.

No need to guess, listen or look to prevent overflow. Tanks are filled faster . . . without spilling. Chances of blowbacks are greatly reduced.

Motorists react favorably to your

THE IMPERIAL BRASS MFG. CO., 1209 W. Harrison St., Chicago 7, Illinois

**IMPERIAL**

BRASS FITTINGS • FLEXIBLE FUEL LINES  
TUBE WORKING TOOLS • BATTERY HYDROMETERS  
BARREL FAUCETS • WELDING EQUIPMENT

APPEARING IN *Jobber Topics*, *Super Service Station*, *Motor Service*,  
*Southern Automotive Journal* and *Canadian Automotive Trade* with  
appropriate copy for each publication.

### P116. Hand Control Valve

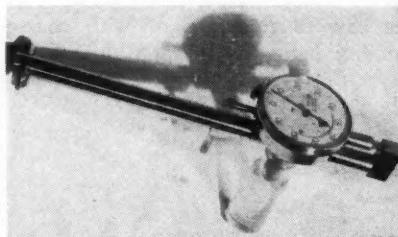
Designed for vacuum power brakes, this newly developed hand control valve for use on tractor trailer combinations, is said to graduate accurately, be consistent in action and positive in setting. Modern in appearance, it affords improved braking action under adverse weather and road conditions. Bendix Products Div., Bendix Aviation Corp., South Bend, Ind.

### P117. Blast-Cleaner

Portable, and weighing 42 lb, this sand blasting machine, the "Blast Cleaner," is connected to any air line and operated at a pressure of 80 psi or more. If no service air is available, unit will operate on 1½ hp compressor. A fine grade dry plaster sand is used. The machine will hold 95 lb, which will blast continuously for one hr. Gordon Mfg. Co., Burbank, Cal.

### P118. Dial Bore Gage

Utilizing a design similar to that employed in the construction of their inside micrometers, the tool will give quickly and accurately the diameters



of internal grooves for "O" rings, snap rings, oil rings, etc., as well as diameters of straight bores. The instrument locates readily on the diameter of the cut to be measured and its indicator dial immediately gives the desired dimension. Operator skill required in its use is a minimum and deep holes are measured as readily as shallow ones. Standard instruments are manufactured to measure all diameters from ½ to 6 in. Rimat Machine Tool Co., Glendale, Cal.

### P119. Flareless Fitting

New flareless tube fittings eliminate tube gouging, limit tube distortion and require no tube flaring. Installation can be made without special tools, and fittings are adaptable to close quarter connections. The gripping action of the fitting sleeve forms a leakproof seal

(TURN TO PAGE 232, PLEASE)

# FOR MORE PAY LOAD

*There's More Worth in KENWORTH*



**How to meet rising costs of operation—** that's the question facing most truck operators. And Kenworth has one of the answers in light weight construction which allows you to carry more payload every trip. While maintaining the highest standards of strength and durability, Kenworth's advanced design and engineering, plus the use of aluminum and other light weight alloys, add up to bigger payloads—more profit—for you.

**Inland Petroleum Transportation Co., Inc.,** one of the West's most successful and longest established firms specializing in the prompt and efficient delivery of petroleum products, has been a Kenworth customer for 15 years. R. J. (Monty) Monroe, general manager, says: "The weight-saving advantages of Kenworth's Model 825 permit us to carry increased payloads, and this is one of the extra values we look for when purchasing trucks."



## KENWORTH

TRUCKS ★ BUSES

FACTORY AND HOME OFFICE: SEATTLE, U. S. A., DISTRIBUTORS IN THE UNITED STATES AND MOST FOREIGN COUNTRIES

# New Product Descriptions

Continued from Page 230

and makes it suitable for copper, steel, stainless steel, and aluminum tubing. It is available in all standard shapes and sizes for tubing up to and including 1 in. O. D. The Aircraft Fitting Co., Cleveland, Ohio.

## P120. Extinguishers

Two and one-half gallon foam, soda-acid and cartridge operated fire extinguishers of seamless drawn shell

construction offer added strength and longer life. These units have a highly polished alloy shell with no dome or side seams. Transparent plastic nozzles are resistant to damage or distortion and make for visual inspection. The cartridge operated extinguishers having this new construction are of both the plain water and the anti-freeze solution types. Pyrene Mfg. Co., Newark, N. J.

## P121. Radiator Seal

This improved Lusco Plastic Seal is said to be effective in repairing automobile radiator leaks, cracked engine blocks, etc. It cleans a system at the same time that it repairs leakages. It works in water, alcohol, glycols and methanol. Subsequent draining of the system after 24 hours does not affect the repaired places. C. F. Lusk Co., Cleveland, Ohio.

## P122. Tilt-Type Trailer

This new "tilt-type" trailer with low platform for greater overhead clearance features a low center of gravity, which improves the safety factor, and a lesser angle of incline, which permits easier loading and unloading of crawler type equipment, non-self-propelled machinery, and rollers. The rear end of the platform of the units lowers to the ground for fast loading and unloading, a one-man operation. Martin Machine Co., Kewanee, Ill.

## P123. Angle Head Drill

A 360-degree angle head attachment for  $\frac{1}{2}$ -in. drills enables drilling in difficult, hard-to-get-at "tight spots." The angle head is quickly removed and will fit any make drill equipped with Model

**2 NEW DEVELOPMENTS —  
FOR TRUCK AND BUS TIRES**

**By DILL**  
Reg. U. S. Pat. Off.

**HI-TEMP Heat-Resisting VALVE INSIDES AND CAPS**

**1**

No. 100-AH Valve inside with special heat-resisting rubber in cup and on barrel.

No. 100-AW Lead gasket on barrel, special heat-resisting gasket in cup.

No. 632 Dome type cap with swivel gasket of special heat-resisting rubber.

No. 631 Hexagon type cap with lead gasket mounted over brass sleeve.

Solves Air Pressure Maintenance Wherever Tire Heat is a Problem Tire engineers and fleet operators, everywhere, are acclaiming this new Dill development. Under abnormal hot tire temperatures, even up to 300° F. and more, the newly developed heat-resisting air seal keeps Dill HI-TEMP tire valve insides and caps airtight, without sticking. Stop road delays, prevent costly tire repairs, increase tire mileage by equipping your tires, now, with Dill HI-TEMPS.

Ask for Dill "Hi-Temp" in the New Orange and Yellow Carton

**2**

**New Long-Handled VALVE REPAIR TOOLS**

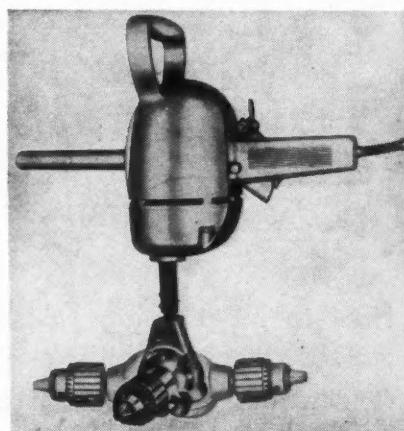
No. 5200 TOOL SET in Handy Leather Pouch

\* INCLUDES THESE TOOLS

No. 5201 Valve Inside Inserter and Extractor  
 No. 5202 Valve Cap Tool  
 No. 5203 Valve Inside "Easy-Out"  
 No. 5204 Valve Stem Refacer  
 No. 5205 Valve Stem Seat Cleaner  
 No. 5206 Valve Stem Rethreader

This new handy tool kit will save time and trouble for the service man working on truck and bus tires. Each tool is long-handled — especially designed to reach inner dual tires for removing and replacing valve insides, caps, and making any necessary repairs on valve stems. The complete set of 6 tools comes in a handy leather pouch with snap button lock which fits in pants, coat or jacket pocket. Order now from your wholesaler, tire, or oil company, or write us for description folder.

**THE DILL MFG. CO.**  
 700 E. 82nd St., Cleveland 3, O.  
 Branch: 1011 S. Flower St.  
 Los Angeles



33B Jacobs chuck. An aluminum casting, grooved to cradle comfortably in the operator's hand, houses 2-to-1 ratio gearing. When set at right angles the tool measures 7½ in. Cummins Portable Tools, Chicago, Ill.

(TURN TO PAGE 234, PLEASE)

**SLOWGAN**  
 Be Safe, Be Seen: Wait  
 for the Green

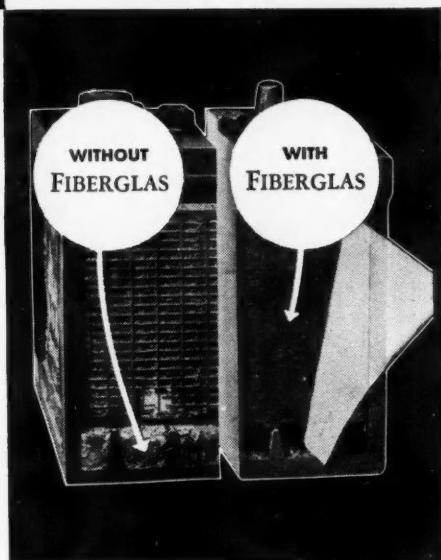
# Why YOUR Business *Gains* from **FIBERGLAS\***

## Double-Insulated Batteries

Batteries double-insulated with Fiberglas  
Battery Retainer Mats last longer and withstand  
more pounding and harder wear than others.

Why? Because Fiberglas Battery Retainer Mats  
materially reduce battery failures by holding  
down shedding and treeing through—in  
addition to protecting the separator.

To you, this means fewer battery breakdowns and  
schedule interruptions—when you use quality  
batteries double-insulated with Fiberglas Battery  
Retainer Mats. For full details, see your  
battery supplier or write to Owens-Corning  
Fiberglas Corporation, Dept. 49-D, Toledo 1, Ohio.



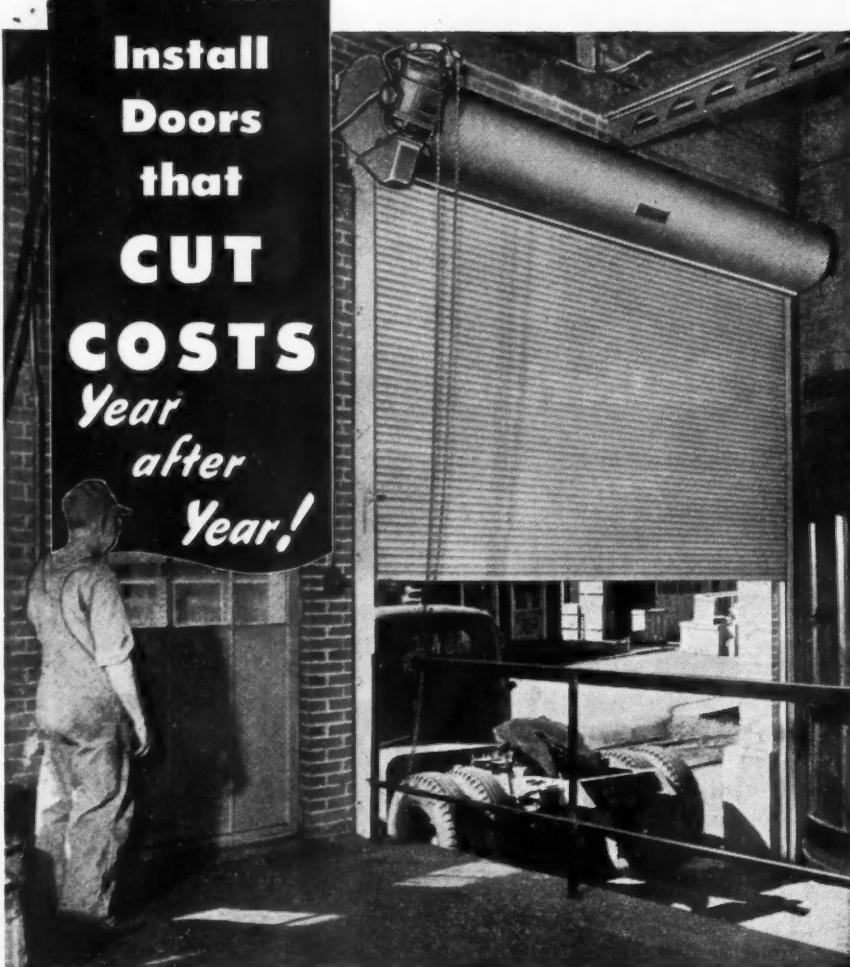
FIBERGLAS IS IN  
YOUR LIFE...  
FOR GOOD!

For Longer, Better Service...  
Get Batteries  
**DOUBLE-INSULATED** with

OWENS-CORNING  
**FIBERGLAS**

\*FIBERGLAS is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

**Install  
Doors  
that  
CUT  
COSTS  
Year  
after  
Year!**



## KINNEAR Metal Rolling Doors

Reducing *door costs* is not the only gain you make when you install Kinnear Rolling Doors. You also help cut other plant costs, in many ways.

Coiling upward action permits full use of all floor and wall space around openings, at all times. You can stack materials within an inch or two of the door, inside or outside—or on both sides—without impeding its action. This promotes more efficient handling of door traffic, deliveries, and shipments.

The smooth, easy action of Kinnear Rolling Doors saves time and labor—and no other type of door is so well adapted to the extra advantages of motor operation. With pushbutton

controls at any desired number of convenient points, the door can be raised or lowered quickly at a second's notice.

As a result, they are consistently closed more quickly after being opened, which brings important reductions in heating and air-conditioning costs.

When opened, the doors remain completely out of the way, safe from damage by wind or vehicles. When closed, their rugged all-metal interlocking-slat curtain assures extra protection against fire, intrusion, wind and weather.

Kinnear Rolling Doors are built in any size, to meet the particular specifications of each opening, in old or new buildings. Motor or manual control. Write for full information.



With this rugged Kinnear Motor Operator, doors can be opened or closed from any number of convenient push-button controls.

*Saving Ways in Doorways*  
**KINNEAR**  
ROLLING DOORS

Offices and Agents in All Principal Cities  
**THE KINNEAR MANUFACTURING CO.**

Factories: 2100-20 Fields Ave., Columbus 16, Ohio  
1742 Yosemite Ave., San Francisco 24, California

## New Products

Continued from Page 232

### P124. Autobody Solder

Differing from other solders in the character of its ingredients, "Super Solder" does not separate or skin over in the car, retaining its original pliability. It is claimed that it is easy to work, flowing on smoothly and feathering perfectly. It does not skin over while being applied, nor does it shrink, peel, pin-hole or crack. It adheres to all materials used in body construction, including aluminum, stainless steel and monel metal. Associated Producers, Inc., Detroit, Mich.

### P125. Fluid Dispenser

Dispensing directly from original 100-lb. containers, the automatic transmission fluid dispenser is provided with 7 ft. of hose, fluid meter and hand-level pumping lever. It has both straight and curved ball-check nozzles to fit all types of automatic transmissions. Each nozzle is fitted with dust-and-dirt excluding cap. Cover gasket seals out dirt and prevents spilling. An identification plate identifies the unit for use only with Type A Automatic Transmission Fluid. The dispenser can be furnished with either a plate-type dolly, band-type dolly or a two-wheel hand truck. Aro Equipment Corp., Bryan, Ohio.

### P126. Plastic Coating

A new line of ready-mixed, abrasion and corrosion resistant Vinyl plastic coatings, called "Calvinac," can be applied to wood or metal by brush, spray or dipping; are air drying; and non-toxic. They are highly dielectric; resistant to alcohol, acids, salts, alkali, and fumes; these coatings are proof against cleaning mixtures, sterilization by steam, and will not oxidize. James Lithgow Co. Inc., Los Angeles, Cal.

(TURN TO PAGE 236, PLEASE)



"It meets any state regulation you can name."

...to help assure  
“on time” schedules  
**equip every vehicle  
in your fleet with a  
Hein-Werner Hydraulic Jack!**

Every vehicle in your fleet should be equipped with a rugged, easy-operating hydraulic jack of ample capacity to quickly handle emergency road repair. Jacks that won't work are a liability. Weed out your worn out jacks and replace them with Hein-Werner Hydraulic Jacks . . . the jacks that are factory tested at 1½ times rated capacity to assure dependability and safety. H-W Hydraulic Jacks are your greatest jack value for economy and service. Order through your Hein-Werner distributor today!

Made in models of 1½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity, Bumper-Lifts, Swift-Lift, Sleeve Pullers and a complete line of Double-Acting Push or Pull Hydraulic Utility Units for body, fender and frame repairing.

*Hein-Werner*  
HYDRAULIC JACKS



# HEIN-WERNER

HEIN-WERNER CORPORATION • WAUKESHA • WISCONSIN

# New Product Descriptions

Continued from Page 234

## P127. Odometer

Installed on the front axle of trucks, buses and passenger cars and on the rear axle of trailers, the Milemaster converts wheel revolutions into total miles. The units are furnished with a clear-face dial with large mileage figures and are sealed against tampering. The registering unit is interchangeable

and can be removed from one vehicle and installed on another without disassembly. Barbour Stockwell Co., Cambridge, Mass.

## P128. Thermostat

A new thermostat said to hold its valve at the proper degree of opening

against the most powerful water pump consists of a brass butterfly valve assembly, operated by a thermostatic piston unit and a closing spring. Dole Valve Co., Chicago, Ill.

## Late Product Flashes

Mounted on the right side, a new mirror, permitting the driver to see dangerous right rear traffic from his seat, has been announced by the George C. Knight Co., Detroit, Mich.

To supplement the conventional automotive and industrial type of spark plug in all thread sizes except 10 mm, a complete line of shielded plugs has been developed by the Champion Spark Plug Co.

Addition of a new clear anti-rust paint to its RUSTREM (Rust Remedy) line of maintenance coatings is announced by Speco, Inc., Cleveland, Ohio.

A new Class "A" Turn Signal Lite, which, according to SAE specifications, requires 12 sq-in of luminous area, is announced by the K-D Lamp Co., Cincinnati, Ohio.

Especially designed to repair heavy duty canvas, TARP-SEAL cement, a non-inflammable, heavy bodied adhesive, which according to the United States Testing Co., can sustain a breaking load of 350 lb, is available from the Black Magic Adhesives, N. Y. C.

"Scotch" brand electrical tape which provides both electrical insulation and abrasion resistance is announced by the Minnesota Mining and Mfg. Co.

(TURN TO PAGE 238, PLEASE)

# GUNITE

## BRAKE DRUMS

### FEATURE NO FLEX

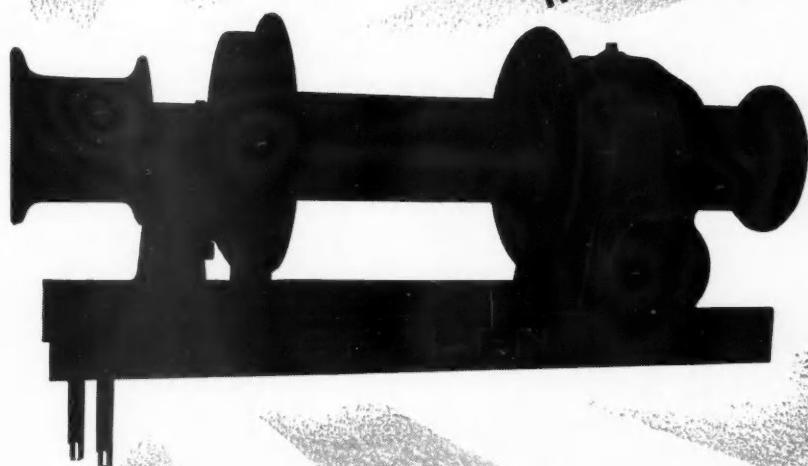
There is no flex on the cam and anchor sides of GUNITE Rib-Type Brake Drums. This means that linings wear evenly, last longer, brake efficiently. Also, burned spots are eliminated and drums last longer, require less frequent refinishing. GUNITES cost less in the long run because they give better service, require less attention. Breakage is eliminated by reduction of flex and by the high rate of heat conduction. Try GUNITES on your toughest runs. Let them prove themselves! Buy GUNITES—for better braking!

MADE BY  
**GUNITE FOUNDRIES**  
ROCKFORD, ILLINOIS

  
GUNITE BRAKE DRUMS . . . FOR TRUCKS, TRACTORS, TRAILERS and BUSES



"Yes, we go everywhere—is that so? Well, you know where you can go, too!"



THE OIL-COOLED...FULLY ADJUSTABLE

AUTOMATIC

SAFETY BRAKE

## assures safety of operation

The BRADEN Oil-Cooled, Fully Adjustable, Automatic Safety Brake is designed for sure-fire holding power in any emergency. It was perfected only after years of experimentation in the factory and use in actual operation. The oil cooling provides maximum cooling benefits, cuts down on brake lining wear, and assures safe braking action under all conditions.

Ask users about the BRADEN Oil-Cooled, Fully Adjustable, Automatic Safety Brake. They'll tell you it's the safest winch brake they ever used.

MODEL M12-18B  
Load Rating — 25,000 lbs.

The OIL COOLED,  
FULLY ADJUSTABLE, AUTOMATIC  
SAFETY BRAKE is standard  
equipment.

**BUY BRADEN — They Are Safer**

BRADEN WINCH COMPANY

Post Office Box 1709

**BRADEN**

TULSA 1,  
Oklahoma



# New Product Descriptions

Continued from Page 236

A strong sales story about electrical connectors, told via direct mail, is being promoted by the Burndy Engineering Co., Inc. Personalized mailing pieces with representatives' names and staff photographs, and a promotion story that shows the extent of jobber sales support, are featured.

The Highway Trailer Co. has added a complete line of trailerized tanks and

tank trucks to its present lines, by the recent acquisition of the Davisbilt Products Co.

The Eutectic Welding Alloys Corp. recently announced that a new series of training classes are being held at the new Eutectic Plant and Welding Institute in Flushing, L. I., N. Y.

The completion of the program for the

11th meeting, April 14 and 15, of the Ohio State Welding Engineering Conference, the theme which is "Economy in Design and Production," was announced by the welding engineering department of Ohio State University.

The Minnesota Mining & Mfg. Co. has purchased 26,000 sq-ft of additional office and warehouse space in Detroit, Mich. Two buildings and nearly four acres of land are included in the property.

Development of a new oil with a secret additive compound that reduces rust, an antioxidant agent and a new detergent additive which with Conoco's oil-plating, doubles the load carrying capacity of the Oil, has been announced by the Continental Oil Co.

Redesigned, complete storage equipment for tool rooms and stock rooms with a correct type of storage accessory available for every item, conveniently located, is now being marketed by Lyon Metal Products, Inc., Aurora, Ill.

Designed to eliminate top shrinkage, SP-7 "Teal," pre-shrunk, rubberized, convertible top fabric, has been placed on sale by the Du Pont Co.

A time-saving Boot Hold-Back device, which is a "U" shaped steel stamping that holds the rubber boot and body back to permit easier removal and installation of the cross pin, has been announced by Neapco Products, Inc., Pottstown, Pa.

## Smaller 'Packages'... Same High Purity LINDE Oxygen and PREST-O-LITE Acetylene

Trade-Mark

Trade-Mark



### now in HANDIER cylinders for

- Garages
- Small manufacturing plants
- Sheet metal works
- Electrical repair shops
- Heating, plumbing, and air-conditioning contractors

	Style	Capacity cu. ft.	Height in.	Diam. in.	Weight	
					Full lb.	Empty lb.
Oxygen	Q*	80	35	7½	67	60
Acetylene	WQ	60	24¾	7¾	55	51

\*In some areas, Style XL, 70 cu. ft.

ORDER FROM YOUR

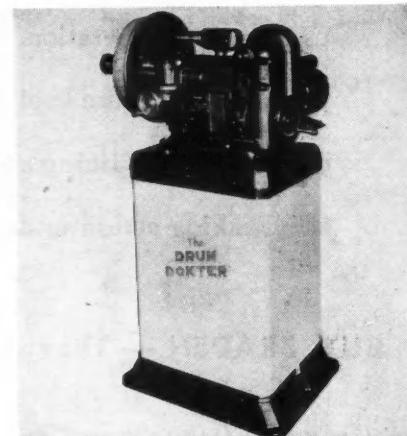
**Linde**  
Trade-Mark  
DISTRIBUTOR

"Linde" and "Prest-O-Lite" are trade-marks of a Unit of Union Carbide and Carbon Corporation.

Everyone who works with metals should have an oxy-acetylene welding and cutting outfit. A jobber near you can supply your needs promptly. Write us for his name and address. The Linde Air Products Company, 30 E. 42nd St., New York 17, N. Y. In Canada: Dominion Oxygen Company, Limited, Toronto.

## P129. Drum Reconditioner

The Drum-Dokter, an improved brake drum reconditioner with a micrometer dial indicator for checking drum before and after reconditioning, machines, grinds and hones drums. A tool sharpener, a hone drive for honing brake



cylinders, reamer drive and chuck, disc brake housing unit for refacing and a flywheel clutch facing unit are available attachments. Barrett Equipment Co., St. Louis, Mo.

(TURN TO PAGE 240, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1950

# 3 GREAT MOHAWK TRUCK TIRES



**SUPER CHIEF  
TRUCK**

An extra tread, heavy-duty truck tire for extremely long mileage. Vented shoulders reduce heat, insure longer wear.



**BIG CHIEF  
TRUCK**

Ruggedly designed for grueling special service—excavating, logging and mining operations, either on or off the road.



**CHIEF  
BUS-TRUCK**

Outstanding in quality throughout the country for safety, service and economy—the tire for the tough jobs.



"*You get more miles on Mohawks!*

*Their outstanding quality has been famous among fleet operators everywhere—for over 37 years! Yes, for every truck and bus tire requirement, you can rely on Mohawks for miles and miles of extra service!"*



**THE MOHAWK RUBBER COMPANY • AKRON 5, OHIO**

# New Product Descriptions

Continued from Page 238

## P130. Fork Lift

Both models of this fork lift truck have a lift capacity of 2000 lb at a 24-in. load center, with capacities of 2220 lb at 20-in. and 2600 lb at 15-in. load centers. Incorporated design features are a new steering axle, solid carriage plate, redesigned forged forks,

adjustable cushioned operator's seat, large diameter steering tires and interchangeable masts. A variety of lifting heights are available. The standard mast has a collapsed height of 64½ in. with an 85-in. lift. The single hydraulic control lever and gear shift levers are mounted on the steering column. The Buda Co., Harvey, Ill.

## P131. Auto Creeper

The new Gi-Gr-Nite auto creepers, feature recessed reinforced, stamped steel corners in addition to a long head rest, new wood grip lock washers and a hand hole for carrying. Side rails have been eliminated. The creeper is low enough so that mechanics may slide under any vehicle. The 3½-in. patented casters enables the creeper to slide over cracks and rough surfaces. Clinton Products Co., Clinton, Mich.

## P132. Drill Adapter

Chucked in any standard ¼-in. electric drill, this Hamer-Dril adapter 8½ by 1½ in., converts the drill into an electric hammer for moderately heavy hammering. The adapter unit changes the rotary motion of the drill (or other driving mechanism such as a flexible shaft with a ½-in. chuck) into hammering action, striking a blow for each revolution of the drill or chuck. Featured is a shock absorber which protects the drill and the operator from the excessive vibration. Hamer-Dril Co., New York, N. Y.

## P133. Operating Recorder

New models of the Servis Recorder, for recording busy time and idle time of motor trucks and machinery, features a marking device which marks on the chart exactly when the recorder was unlocked. This mark appears as a round dot on the face of the chart and

VAPOR  
**Ampco**  
LUBRICATOR

*levels the Highway  
to a ROADBED*

A Great Basic Development in Top Cylinder Lubrication

This advertisement features a large, smooth, asphalt highway stretching into the distance, symbolizing a "smooth roadbed". Above the highway, the text "levels the Highway to a ROADBED" is written in a flowing script. To the left, the Ampco logo is displayed within an oval shape. Below the highway, there is a small caption: "A Great Basic Development in Top Cylinder Lubrication".

Imagine a highway as smooth and level as a railway road bed — no hills, no dales, no dips, no rises! Just smooth sailing! Every highway is like that when your fleet's AMPCO-equipped! Because the AMPCO Vapor Lubricator gives you more power for the up-grades, more speed for the level stretches and fuel economy that more than compensates for the winding, twisting, rising, falling highway ahead. But don't take our word for it (nor the word of leading petroleum experts)—take any two of your fleet, put an AMPCO on one, don't put it on the other. Then, compare! Make this test today. See your AMPCO Dealer now, or write us and find out how you can make this amazing test.



**AUTOMOTIVE & MARINE PRODUCTS CORP.**  
87 HARVARD AVENUE, BOSTON 34, MASS.



it is also embossed on the back. The models are completely changed in shape and appearance and now have a black crinkle finish. The Service Recorder Co., Cleveland, Ohio.

(TURN TO PAGE 242, PLEASE)

# Uniform High Heat is Beneficial!

FLEET OWNERS! — Study This Chart, Read These Facts, Heed The Results!

# How HOT is your Engine?

The amount of wear which takes place in an engine after a cold start depends upon how fast the various parts attain their correct operating temperature and how long it takes the oil to warm up and become fully circulated. The temperatures shown below the chart are the approximate operating temperatures.

## KYSOR SHUTTERS

.. Provide Quicker Warm-Up  
and Keep the Kind Heat In!

### Furnish Temperature Control

Contrary to popular belief, heat is helpful to a motor—if uniform, and properly controlled. A Kysor Shutter on your radiator insures a quicker warm-up! Operating automatically (by air or vacuum control) it maintains the proper temperature at all times. The results:

Less wear on cylinder wall and elsewhere . . . Prevents sludge . . . Avoids frequent engine breakdowns . . . Less oil consumption . . . Adds more power and longer life . . . 8%—12% more fuel saving

This means greater efficiency for truck operators and great economies for fleet owners. Kysor Shutters are easy to install—or specify them from your truck manufacturer.

Write for bulletin or Specific Information as applied to your Fleet.

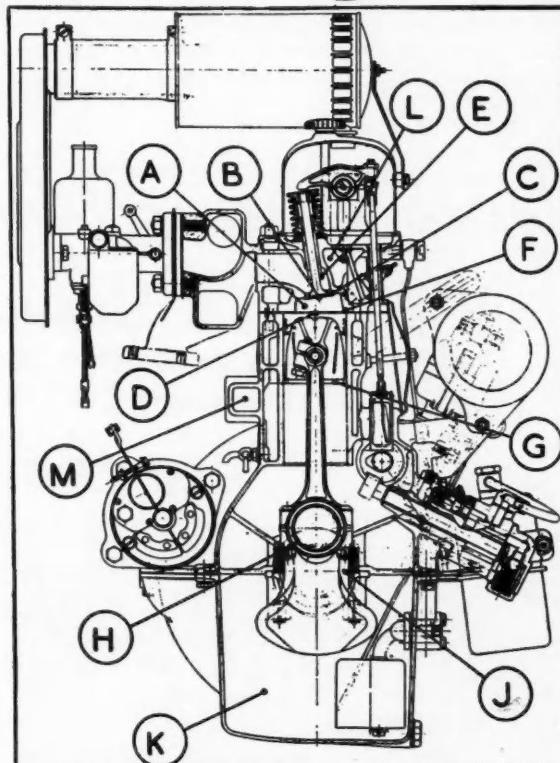


Chart by courtesy,  
MOTOR TRUCK & COACH (Canada)

A—Flame Temperature	4532° F
B—Exhaust Valve Head	1400° F
C—Exhaust Valve Seat	662° F
D—Piston Crown (Center)	572° F
E—Exhaust Valve Guide (Inner End)	446° F
F—Cylinder Head	302° F
G—Piston Skirt	284° F
H—Big End Bearing	212° F
J—Main Bearing	203° F
K—Oilpan Oil	185° F
L—Cooling Water (Out)	176° F
M—Cooling Water (In)	122° F



"Built to Last"

KYSOR HEATER COMPANY Cadillac, Michigan

CANADIAN REPRESENTATIVES... RAILWAY & POWER ENGINEERING CORP.

NEW GLASGOW • MONTREAL • NORANDA • NORTH BAY • TORONTO • HAMILTON • WINDSOR • WINNIPEG • EDMONTON • VANCOUVER

# New Product Descriptions

Continued from Page 240

## P134. Door Switch

A magnetic switch designed for signalling and operating functions rings a bell or sounds a chime, summoning attendant to open the door as a truck enters.

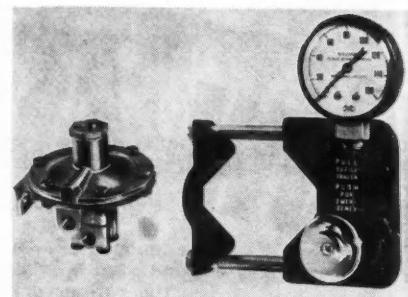
It can also be used as a warning signal to pedestrians crossing drives. Snow, ice, or water will not affect its

operation. It can be used to open garage doors automatically while driver sits at the wheel of his truck or car. Nu-Way Signal Co., Chicago, Ill.

## P135. Air Control

An automatic air line control system, engineered to give braking power

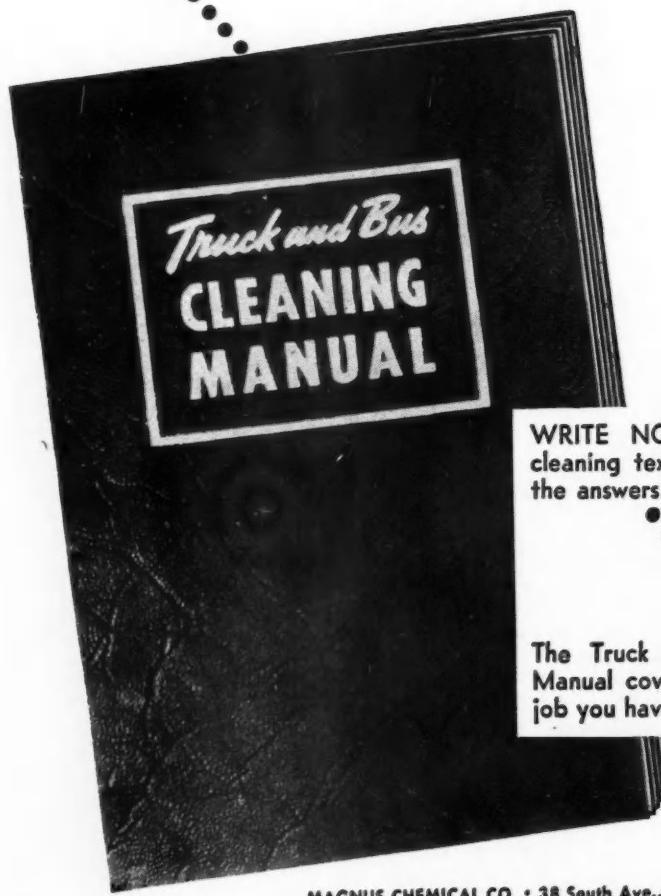
under most known human or mechanical air brake failures, is available in a compact kit which can be installed by any mechanic. The system contains a cab-mounted air valve with gage mount-



# You Can Have . . .

- ① Cleaner Bus Bodies
- ② Faster and Better Dismantled Parts Cleaning
- ③ Safer Cleaning Routines for Cooling Systems
- ④ Dependable Sludge Control

. . . and they will cost you less!



WRITE NOW for this free cleaning textbook and look up the answers:

- ① Pages 37-43
- ② Pages 17-29
- ③ Pages 30-36
- ④ Pages 11-16

The Truck and Bus Cleaning Manual covers every cleaning job you have to do!

MAGNUS CHEMICAL CO. • 38 South Ave., Garwood, N. J.  
In Canada — Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que. Service representatives in principal cities.



**MAGNUS**  
CLEANERS • EQUIPMENT • METHODS

ing bracket and the Williams ES-57 relay control valve. This installation is said to offer automatic action for braking if air service line becomes broken; if trailer breaks away; if relay emergency valves become leaky. Disconnecting trailer or connecting trailers on a grade is also simplified. Power Brake Equipment Co., Portland, Ore.

## P136. Fork Truck

A 10,000-lb capacity fork-lift truck, gasoline-powered and equipped with the Dynatork Drive, has been added by the Industrial Truck Div. of Clark Equipment Co. The new model is known as the Utilitruk-100.

The Dynatork Drive will be standard equipment on the new truck, and the only type of drive available. It transmits engine power through a magnetic field, across an air gap, eliminating need for any type of friction clutch. The conventional transmission is also eliminated, and replaced by constant-mesh forward-and-reverse gearing.

Other features are the Clark pivoted steering-axle assembly, which increases stability by maintaining all four wheels in constant contact with the road surface; and a 6-cylinder Red Seal Continental industrial-type engine of 209 cu in. displacement, developing 50 bhp at 1800 rpm.

## P137. Continental Engine

Continental Motors has broadened its line of small air-cooled industrial engines. (TURN TO PAGE 244, PLEASE)

\*\*\*\*\*

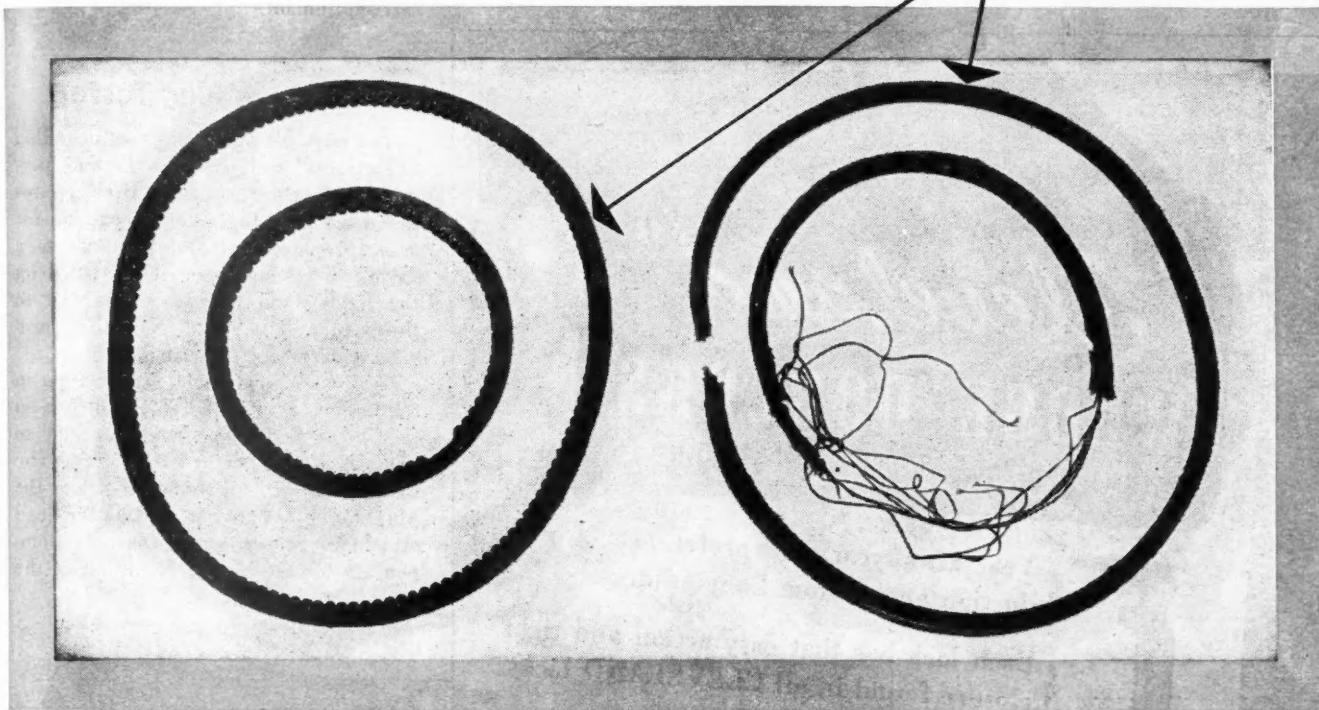
## J OBSERVATION

It is possible to make a sound argument without a lot of noise

\*\*\*\*\*

# Which belts went to school

## 90% LONGER?



Both these sets of automotive belts ran on school busses. The big belts drove generators, the small belts compressors.

The set on the left—Dayton Cog-Belts\*—went 46,241 miles without failure. The other set "flunked" after only 24,277 miles.

Dayton Automotive Cog-Belts\* consistently outrun other makes. They are of exclusive, patented Cog construction. They are scientifically built to bend. The space between cogs takes up compression as the belt goes round the pulleys. Result: greater flexibility, less heat generated, longer life.

For longer trouble-free belt life on fan, generator, and accessory drives, take a lesson from these belts that went to school—get Dayton Cog-Belts\*! See your Dayton Distributor or write:

**THE DAYTON RUBBER COMPANY, DAYTON 1, OHIO**

\*T.M.

### Safety shows up in "Profit and Loss"

Safety often means the difference between a fleet owner's operating in the red or the black. Dayton has designed a colorful set of safety posters (17" x 22") that will help sell your drivers on safety. They are *free* to all fleets. Just fill out the coupon!



**THE DAYTON RUBBER COMPANY  
DAYTON 1, OHIO**

Name \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City & State \_\_\_\_\_

**Cog-Belts by Dayton Rubber**

**WORLD'S LARGEST MANUFACTURER OF V-BELTS**

# New Product Descriptions

Continued from Page 242

engines with the introduction of two new models, the AC-5 developing  $\frac{3}{4}$  to 1 hp, and the AC-6 developing  $1\frac{1}{2}$  hp. Both feature specially-designed suction-type carburetor in conjunction with underslung fuel tank. The AC-5 extends the company's range below its former  $1\frac{1}{2}$  hp level.

The new models are single-cylinder

four-cycle L-head engines, having bore and stroke of  $2\frac{1}{8}$  and 2 in. respectively, displacement of 7.1 cu in. and compression ratio of 5.2 to 1. Like their companion models, they are designed for heavy duty. Power take-off end of crankshaft is equipped with ball bearings of large capacity, and cranking end with shoulder-type replaceable

bronze bearing with integral thrust face. Exhaust valve is heat- and corrosion-resistant silchrome steel, seating in special alloy steel insert. Standard equipment includes oil bath air cleaner, dustproof and moisture-proof Wico flywheel-type magneto, blower housing, muffler, 1-qt fuel tank, air-vane governor, and rope starter pulley with rope and handle. Recoil or kick starter assembly, remote throttle control, ignition lock, and heavy-duty 6-1 reduction gear, which can be mounted in any of four positions, are available as special equipment.

## "Cleveland" WEDGE DORLOKS



Year after year, the preference of production and custom bodybuilders.

Each lock has that easy action and tight closure found in all CLEVELAND locks.

Heavy springs force firm pressure on rugged drop-forged bolts. Beveled strike plates to exactly fit the take-up angle of the bolt furnished at no extra charge.

Centerpiece completely covered to prevent merchandise being caught in working parts.

Cadmium plated to insure trouble-free action for many years.

No. 2385 Right-hand Lock illustrated. Left-hand or three-point locks available.

New items constantly being engineered and developed for the Automotive trade.

Send for complete catalogue #22-B.



THE CLEVELAND HARDWARE  
and FORGING COMPANY

3264 East 79th St.

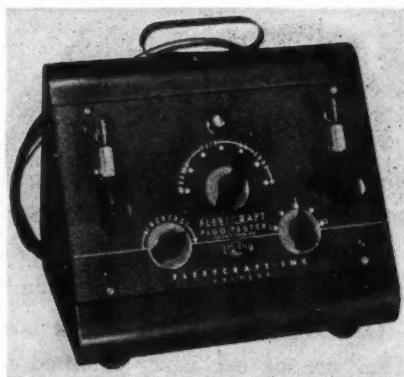
Cleveland 4, Ohio



## P138. Spark Plug Tester

The portable spark plug tester called "Fleetcraft" weighs seven lb and permits on-the-engine testing. It eliminates the need for plug removal except for actual replacement and thus effects a saving in testing time. It is placed on the fender and the leads attached to the vehicle's battery. No other provision for power is needed.

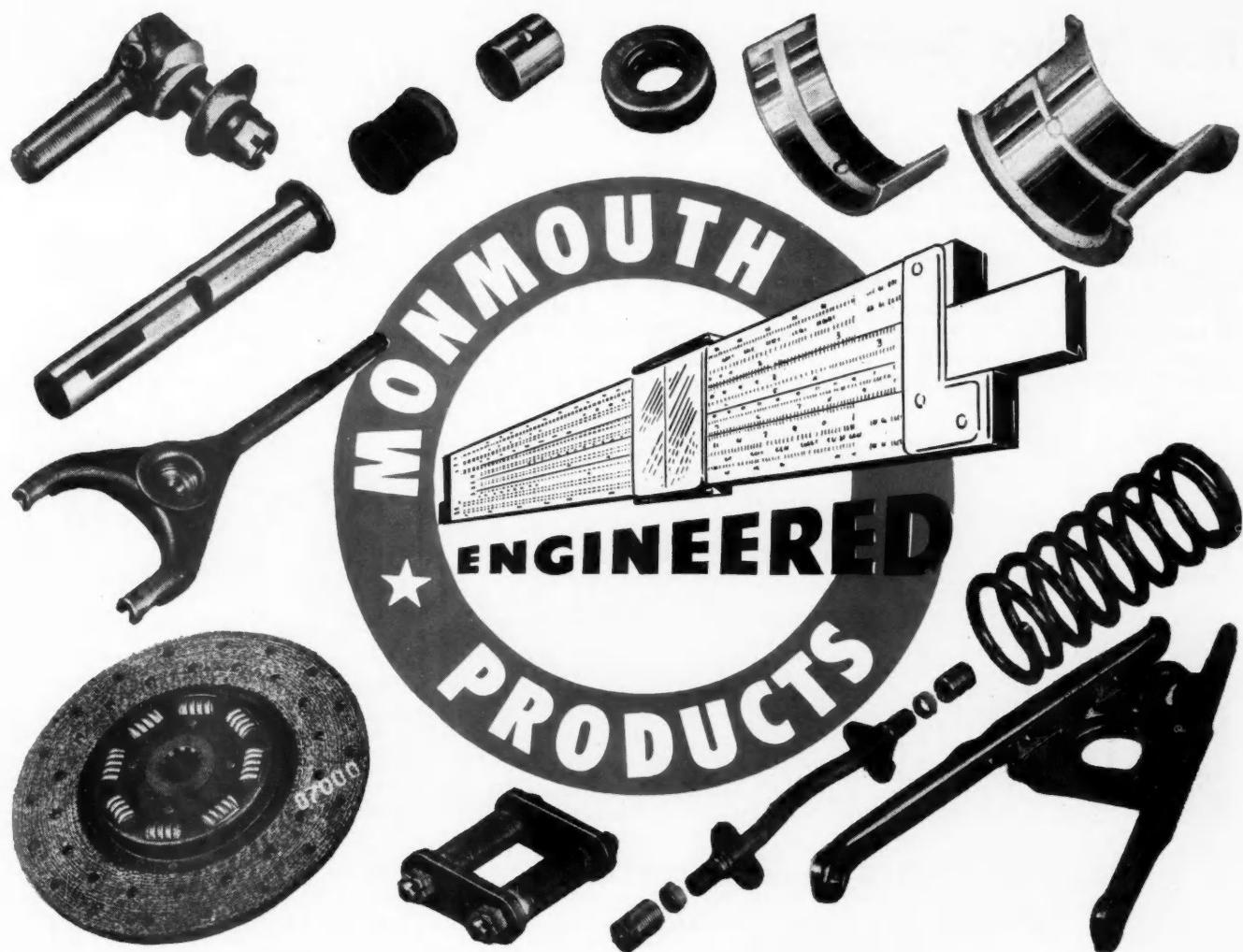
A new plug, identical to the type in the engine, is inserted into a fitting on the instrument panel and checked to operate at 100 per cent efficiency. The distributor wire is removed from the plug to be tested and the tester lead attached. One control is set to compensate for the charge condition of the



battery. Manipulation of a second control then indicates the efficiency of the plug under test as compared to the new plug in the panel. For bench testing a second fitting on the instrument panel receives the plug under test and the comparison is made again against the new plug. Fleetcraft, Inc., Chicago, Ill.

## P139. Portable Welder

This high output portable spot welder for 220 volt lines, weighs only 31 lb. It can spot weld to two pieces of 13-gage of stainless or mild steel, providing (TURN TO PAGE 246, PLEASE)



## What they are—and why it pays to use them



Your  
NAPA Jobber  
is a Good Man  
to Know!

**T**HE line of Monmouth Replacement Parts includes the world's finest engine bearings, clutch plates and parts, King Bolt Sets, front end parts, and wheel suspension parts.

It pays to use Monmouth Replacement Parts because each one is specially engineered for the service which the vehicle is called upon to perform and the problems which will con-

front the repairmen in making replacements.

It pays to use Monmouth Engineered Replacement Parts because of the outstanding *Minute-Man Service* provided by N.A.P.A. Jobbers coast to coast.

For economy and perfect performance, specify "Monmouth" when you require replacement bearings, clutch plates and parts, and chassis parts.

**MONMOUTH PRODUCTS DIVISION**  
THE CLEVELAND GRAPHITE BRONZE COMPANY  
Cleveland 3, Ohio

FOR ENGINE BEARINGS  
CLUTCH PLATES AND PARTS  
CHASSIS PARTS

Monmouth  
Trade Mark

*is the name*

# New Product Descriptions

Continued from Page 244

ing material fit-up is good, and two pieces of 16-gage galvanized. Incorporated is the Miller multi-pressure tong lever which enables the operator to get into spots where working space is limited. A handle may be attached to either side of the welder to provide for easy operation and portability. The Miller Electric Mfg. Co., Appleton, Wis.



The Triborough Bridge and Tunnel Authority Chose  
**THE BIEDERMAN TRUCK**

because of its

- Sturdy Construction
- Dependable Power
- Capacity for Big Loads
- Advanced Design
- Accessibility of All Parts

**FLEET OPERATORS:** Let us send you complete specifications of the Biederman National Standard Model. Compare them with any other truck on the market and you will then understand why the Triborough Bridge and Tunnel Authority chose Biederman trucks for their reliability.

For complete information write, wire or phone.

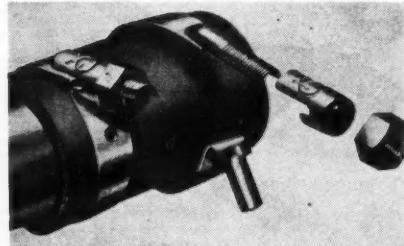
**BIEDERMAN MOTORS CORPORATION**  
CINCINNATI, OHIO

compact, close headroom, lightweight and easy to handle in tight places.

Construction features simplicity of design, a modern gear drive, Weston type brake, steel load chain, steel housing, self-lubrication, and drop forged top and bottom hooks.

## P140. Hand Hoists

Wright Hoist Division of American Chain & Cable Co., Inc., York, Pa., has announced a new line of Wright Safeway hand hoists. These new hoists are made in capacities from  $\frac{1}{2}$ -ton to 4-ton with an unusual degree of safety, efficiency and portability. They are



connection that is unnecessary to shellac. Because of the design of the split thread, it provides a push-pull action so that a 360-deg seal is assured. The thread stands from 80 to 110 in. lb torque. Blaisdell Mfg. Co., Long Beach, Cal.

## P142. Light Portable Hoist

Weighing only  $8\frac{1}{2}$  lb, the Lug-All, winch type hoist has a 3000-lb lift capacity and a travel of  $7\frac{1}{2}$  ft with maximum load. With a power ratio of 30 to 1, lifting is obtained through ratchet action with a pawl holding the load. The unit is tested for 50 per cent overload. Flexible aircraft cable is used with the cable drum, shielded to prevent back lash. The frame is made of aluminum alloys and hooks of carbon steel. Pre-lubricated sleeve-type bearings are used throughout. Lincoln Precision Machining Co., North Grafton, Mass.

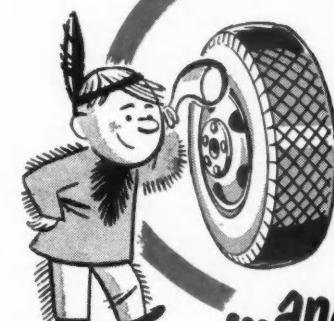
## P143. Hand Truck

The nose plate of this hand truck contains two small wheels which enables it to be rolled under palletized loads. With a slight pull on the handles, the load tilts into balance for carrying. Made of an angle iron frame  $1\frac{1}{2}$  by  $1\frac{1}{2}$  in., the 8-in. regular wheels are mounted in solid rubber tires and incorporate grease-packed roller bearings. Unit is 50 in. high, 20 in. wide and has a base plate with a 13-in. nose. Capacity is 1200 lb and weight is 110 lb. Anthony Truck Co., Paducah, Ky.

(TURN TO PAGE 298, PLEASE)

# Drums last longer with Johns-Manville Brake Blocks...

...you get freedom  
from scoring



...you get  
quiet braking

...You get reduced  
heat checking

...you  
get low  
drum wear



...and you get sure, safe STOPPING all the time

On the country's toughest runs—where trucks and buses haul the heaviest loads, and brake linings get the most rugged test of their stopping ability and long life—the new J-M Brake Blocks have more than proved that they can take it!

There's good reason for this... because J-M Brake Blocks are the result of a new, scientifically balanced formula-

tion, that was especially developed by the Johns-Manville Laboratory to give slow, even wear and to prevent costly scoring and checking of drum surfaces...that was designed to give the longest, most economical brake block life with the greatest amount of trouble-free service.

As proved on the Heat Check Analyzer—an exclusive J-M laboratory

device for checking both block life and drum life...and as proved on thousands of runs, and hundreds of thousands of miles of the hardest road usage on all kinds of trucks and buses...J-M Brake Blocks will give you fewer pull-ins, better block and drum life, and better mileage at lower operating cost. Why not test a set of J-M Brake Blocks on your next pull-in!

PRODUCERS OF THE FAMOUS 4-STAR FLEET TESTED SETS



**Johns-Manville ASBESTOS FRICTION MATERIALS**

THE FIRST NAME IN ASBESTOS BRAKE LININGS

# RIG IT IN 5 seconds!

## AMERICAN HEAVY DUTY UTILITY SNATCH BLOCK



Here's a snatch block any man can rig in 5 seconds... without a wrench! No loose parts; nothing to drop or lose. Available in 6", 8" and 10" sheave diameters. Sold by distributors everywhere. For catalog showing all wire rope blocks—1½ to 250 tons...

**MAIL THIS COUPON**

### American Hoist

52 & Derrick Company  
St. Paul 1, Minnesota

- Please send catalog on AMERICAN UTILITY SNATCH BLOCKS.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

## Washington Runaround

Continued from Page 35

Jan, pg 67) will "highlight the national problems and complexities experienced in our domestic transportation so that at a later date the subcommittee can recommend legislation based upon accumulated facts and testimony."

Meanwhile, the House Interstate and Foreign Commerce Committee has concluded a series of hearings designed to bring committee members up to date on transportation problems as well as to give the various transportation industries and agencies an opportunity to review problems peculiar to their respective fields. The hearings were highlighted by a dreary recital of the woes of the railroads whose spokesmen blame the present sad state of affairs on "subsidies of various kinds to other forms of transportation" and of uneconomical regulation between the several forms of transportation. The railroad claims were refuted by the American Trucking Association, Inc. No overall legislation amounting to very much is likely to result from the hearings before the House Committee as will probably be the case in regard to the Senate Committee.

### Federal Transport Consolidation

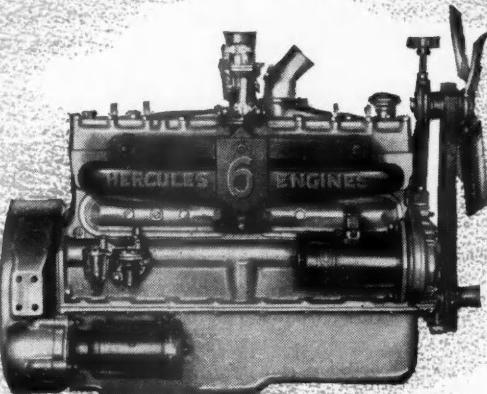
President Truman has taken another step toward consolidating transportation functions of the Federal Government in the Dept. of Commerce. His reorganization proposal to Congress which would abolish the Maritime Commission and transfer its duties and functions to the Commerce Dept. will become effective May 13, unless turned down by either House.

Mr. Truman in submitting the plan, stated that over the years "transportation functions have become widely scattered" throughout the government in direct contradiction to the act which charged the Commerce Dept., with fostering, promoting, and developing" \* \* \* \* shipping, \* \* \* \* and the transportation facilities of the United States."

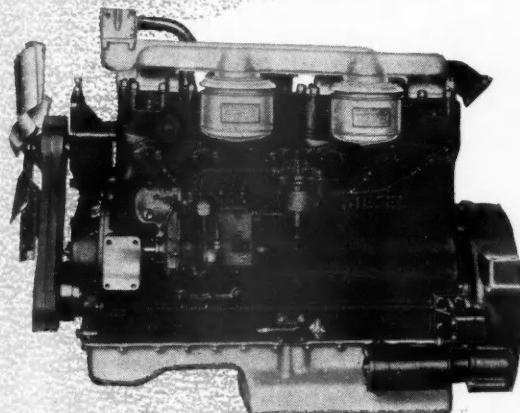
The President also pointed out that he intends to "look to the Secretary of Commerce for leadership with respect to transportation problems and for the development of over-all transportation policy within the Executive Branch."

In this connection, the President set forth his plan to appoint a new Under Secretary of Commerce for Transportation to supervise "the varied and com-

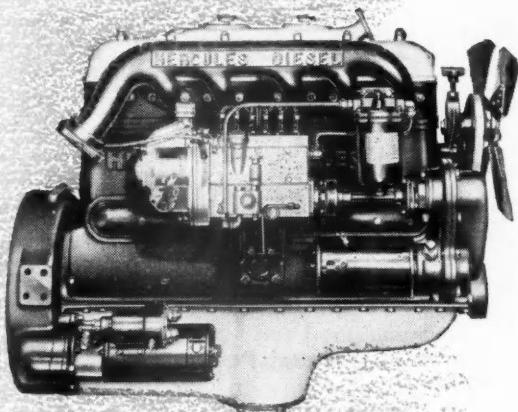
(TURN TO PAGE 250, PLEASE)



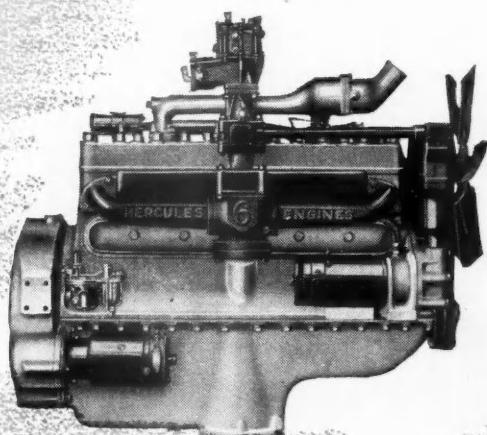
Model JXLD—Hercules 6 cylinder Gasoline Engine  
339 cu. in. displacement



Model DFX—Hercules 6 Cylinder  
Diesel Engine 935 cu. in. displacement



Model DRX—Hercules 6 cylinder Diesel Engine  
529 cu. in. displacement



Model RXLDH—Hercules 6 cylinder Gasoline Engine  
558 cu. in. displacement

*More Miles for  
your Money  
with*

# HERCULES ENGINES

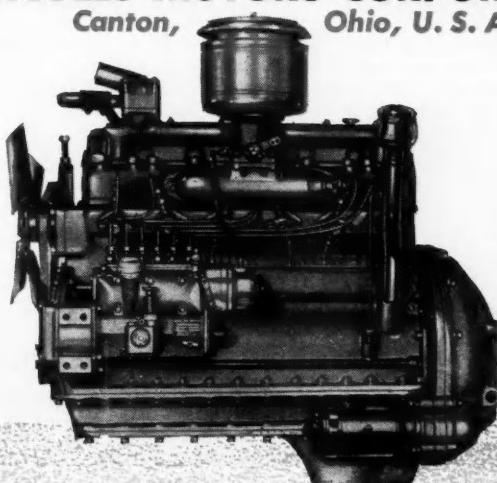


It takes that extra power and zip—the long life performance built into every Hercules high speed, heavy duty truck engine to keep trucks piling up low cost mileage on today's rugged schedules. It takes the streamlined design, sound engineering and modern, simplified construction, for which Hercules engines have an enviable reputation, to keep operating and maintenance costs to a minimum.

Hercules engines for truck service are built in a wide range of sizes and types, both gasoline and diesel, to meet every type of truck installation requirement. The compact design and light weight, heavy duty, high speed features of the Hercules diesel engines make them ideally suited for truck applications. Hercules invites you to draw upon its many years of experience in serving the truck industry with practical power application.

**HERCULES MOTORS CORPORATION**

Canton, Ohio, U. S. A.



Model DIX6D—Hercules 6 Cylinder  
Diesel Engine 248 cu. in. displacement

# Washington Runaround

Continued from Page 248

plex transportation programs of the Department" and provide "central leadership in transportation matters."

Mr. Truman further stated that "without question the Department of Commerce is now the appropriate center for transportation programs." He pointed out that the Commerce Dept. now contains the Bureau of Public

Roads, Civil Aeronautics Administration, the Weather Bureau and the Coast and Geodetic Survey. The transfer of the functions of the Maritime Commission will bring into the Commerce Dept. the principal water transportation agency of the government.

It is anticipated that future reorganization proposals will call for the trans-

fer of the non-regulatory functions of the ICC to the Commerce Dept. This course of action was recommended by the Hoover Commission on Government Reorganization.

## Skilled Labor Shortage

The Labor Department is warning that a shortage of skilled labor is likely to show up within the next few years. The reason is, the Bureau of Apprenticeship says, that not enough qualified places are training new workers—that out of 400,000 qualified business and industrial places, only about 150,000 are presently conducting apprenticeship programs. As a result, while nearly 73,000 apprentices (including 9,800 auto mechanics and 3,100 machinists) will complete training this year, only about 114,000 will do so in the following four years—or about 28,000 a year. This number, the BA says, is not "enough to meet demands of industry."

## Washington Miscellany

All controls requiring the use of synthetic rubber in camelback, primary retread material, have been removed by the Dept. of Commerce. New rubber may now be used in camelback without government limitation . . . The Air National Guard will receive 7,000 general purpose vehicles from the Air Force under a program initiated last October. About 5,000 vehicles have already been shipped with the remainder to be delivered by June 30. The vehicles include: 3,300 trucks of various types,  $\frac{1}{4}$  to 5 tons; 3,200  $\frac{1}{4}$  and  $1\frac{1}{2}$ -ton trailers; 100 ambulances; also jeeps, motorcycles, bicycles, command and staff cars.

## Are You Still Switching Your Trailers the Hard Way?

ARE you still cranking dollies when doing your yard switching? This antiquated practice has long since been abandoned by truckers who are interested in reducing labor costs. How? Simply by equipping their tractors with Pollard Fifth Wheel Hydraulic Platforms.

With a Pollard Platform on your tractor, the driver can move a parked semi-trailer from one location to another all by himself. No need to have an extra man crank dollies. No need even for the driver to leave the cab.

This is because a tractor equipped with a Pollard 5th Wheel Hydraulic

Platform slides easily under the trailer front. The trailer is then elevated hydraulically with cab control, enabling the trailer to be moved with dolly wheels in vertical parking position. No dolly cranking!

The Pollard Platform actually enables one man to move twice as many trailers as 2 men can move with tractors having conventional 5th wheel mountings. You can take one man off the job and never miss him, making a worthwhile saving in labor costs.

No wonder the Pollard Fifth Wheel Hydraulic Platform has satisfied users all over the country! Write us for the names of users near you.

C. E. POLLARD CO.

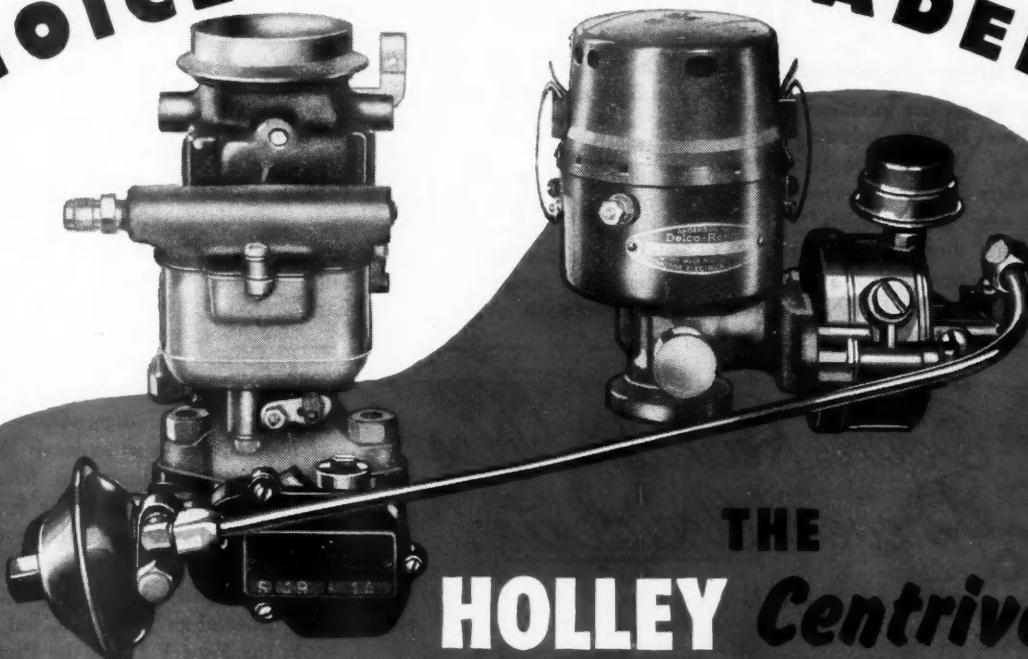
14571 Schaefer Rd., Detroit 27, Mich.

LITERATURE  
ON REQUEST



5TH WHEEL  
HYDRAULIC PLATFORM

CHOICE OF THE LEADERS



## THE HOLLEY Centrivac SANDWICH GOVERNOR

*Combined with the DELCO Distributor*

**REDUCES POWER LOSS:** The Holley Centrivac Governor does not choke the engine when pulling heavy loads up hills because governor throttle remains wide open until the engine reaches its governed speed. Hence, the Holley Governor reduces power loss and improves operating efficiency.

**PROVIDES FASTER ACCELERATION:** The Holley Governor permits the engine to accelerate normally since the governor throttle remains wide open up to desired control point of engine speeds.

**ELIMINATES SURGING:** Truck drivers appreciate the steady flow of power, free from surging, which has been accomplished by the unique and exclusive design of the Centrivac principle of centrifugal air valve control over a vacuum powered diaphragm.

**IMPROVES SPEED REGULATION:** The new Holley Governor is operated by a vacuum powered diaphragm

which is controlled by a centrifugal air valve mounted on the side of distributor. This insures a more even flow of power—greatly improved engine performance—a higher economy factor.

**INSURES SMOOTHER OPERATION:** Because engine surging has been successfully eliminated, truck operation has been improved. Driver objections to governor controlled vehicles have been largely overcome with the Holley Centrivac Governor, while wear and tear on a driver's nerves are removed, and fatigue factors reduced to the minimum.

**ECONOMICALLY INSTALLED:** Due to its revolutionary design, the Holley Centrivac Sandwich Governor can be installed on most popular truck designs without need for special drive, linkage, or adaptor accessories. Only one piece of metal tubing is used, connecting the governor control valve with the governor.

### STANDARD EQUIPMENT ON

AUTOCAR, CHECKER BUS, GENERAL AMERICAN AERO COACH,  
INTERNATIONAL HARVESTER, WARD LA FRANCE,  
FLEXIBLE BUS, GENERAL MOTORS TRUCK AND COACH.

ALSO AVAILABLE FOR  
OTHER POPULAR MAKES OF TRUCKS

**HOLLEY**  
Carburetor Co.  
5930 Vancouver Ave.  
DETROIT 8, MICHIGAN

AUTOMOTIVE EQUIPMENT AND ACCESSORIES

# Detroit Dispatch

Continued from Page 31

## IHC Price Comment Explained

In order to clear up any misinterpretation of an item in this column in February stating that International Harvester "recently increased prices on its completely new 1950 models," it was not meant that there had been an increase since the new line was announced in late November. The state-

ment that prices were up 5 to 6 per cent on light models and 8 to 9 per cent on the heavy duty line was based on information from a dealer. There seems to be some question about comparing prices on a comparable basis with the previous model, which always is a very difficult problem. Also, International has widened its range to meet specialized transportation problems so that

the various models and ratings have been rearranged. Consequently, it now is rather difficult to make any direct price comparisons.

## Studebaker Counts on Its "Champion"

Studebaker is expecting to go after considerable fleet business with its new Champion custom model priced in direct competition with Ford, Chevrolet and Plymouth. The car is identical in chassis and body with the higher priced deluxe Champion, but has been stripped of radiator ornament, stone guard and chrome moldings. Upholstery material is not quite so expensive, some chrome has been eliminated from the instrument panel, and floor is covered with a rubber mat instead of carpeting. Priced \$75 under the deluxe model, it is slightly higher than the Chevrolet Special and Ford Six, but cheaper than the Ford V-8 and the Plymouth.

## First Returns on ATA's Trailer Theft Study

Early returns from a questionnaire sent out by ATA to fleet operators indicate little progress will be made to amend the National Motor Vehicle Theft Act to cover trailers and semi-trailers. Theft of these units currently is not a Federal offense, although theft of a tractor or contents of a truck or trailer is covered.

## New Gramm Trailers Reported

Gramm Trailer is reported to have two new trailer models about ready for announcement. They are equipped with aluminum bodies and probably will be out this month.

## Engineers Cool to British Turbine Job

Interest in gas turbines got a fillip the last few weeks with the announcement that an English car manufacturer has produced a car powered by such a unit. Engineers in Detroit, however, are unimpressed, pointing out there are still serious problems of noise, heat, smell, and fuel consumption to be licked. In this country Boeing Aircraft has been working on a turbine power plant for trucks, but reports indicate that it still is far from a practical unit.

(TURN TO PAGE 254, PLEASE)

COMMERCIAL CAR JOURNAL, April, 1950

## THE Servis Recorder Helps Prevent Accidents -

-SAY INSURANCE COMPANIES

These are from  
actual letters:

- "You are quite right—we do insist that quite a few of our assureds adopt the Servis Recorder in order to eliminate the driver stopping an hour or so and then getting out on the highway and burning up the road in order to arrive on schedule. The latest lines on which we have required Recorders are the \_\_\_\_\_ of Chicago and \_\_\_\_\_ of Detroit."
- "Please get in touch with the \_\_\_\_\_ and try to get the Servis Recorder as standard equipment upon their units, as we have been having some difficulty on this line and I believe it would be of material assistance to them in the reduction of accidents if they would equip their outfits with Servis Recorders and then make an intelligent use of them."
- "I see that you were able to sell the \_\_\_\_\_ quite a few recorders, and there has been a marked improvement in the operation of this line."
- "We will appreciate it very much if you will send your pamphlet 'About Speeding and Accidents' to the \_\_\_\_\_ Company of Detroit, \_\_\_\_\_ of Indianapolis, and \_\_\_\_\_ of Kansas City. I would certainly be pleased if they would install Servis Recorders."

Send for our "ACCIDENTS" folder.

### THE SERVICE RECORDER CO.

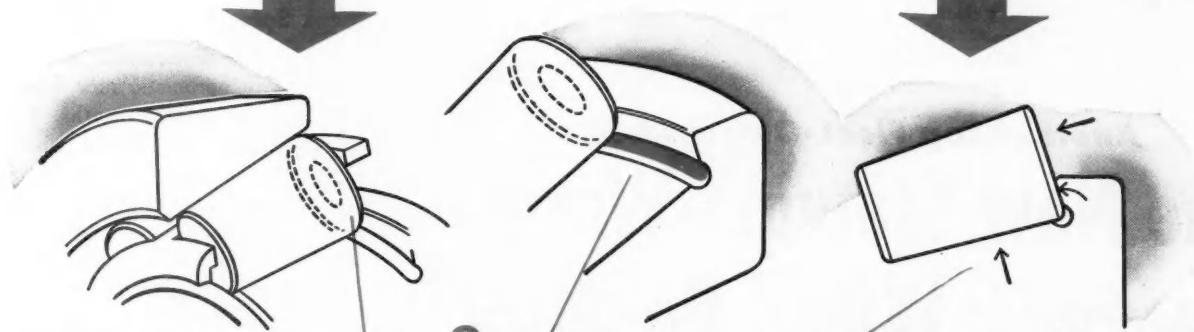
1375 Euclid Avenue, Cleveland 15, Ohio

"Making Up" Wasted Time Causes Most Speeding—and Speeding Causes Most Accidents.



BOWER BEARINGS ARE

SPHER-O-HONED

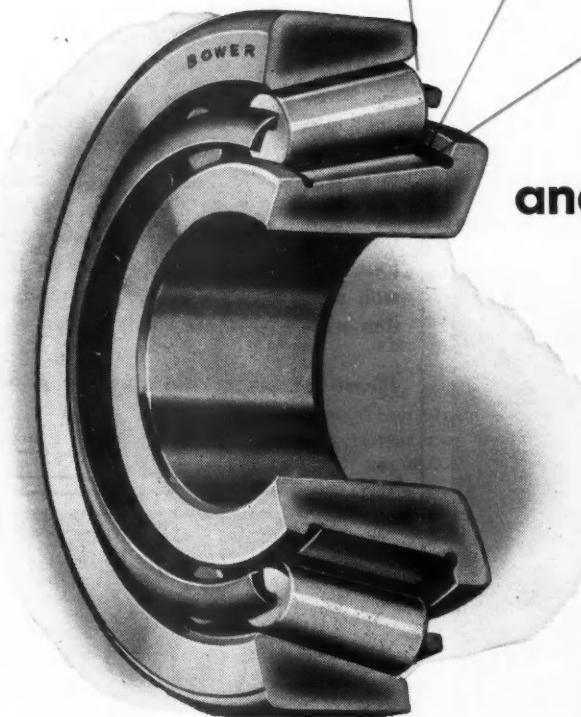


**SPHER**—Stands for generated spherical roll-head and flange surfaces designed and manufactured to the exact contour they would otherwise acquire in use. Alignment is improved; wear minimized.

**O**—Stands for the liberal oil groove which assures a generous supply of lubricant at the critical point where the roll-head operates against the flange, greatly reducing destructive friction.

**HONED**—Stands for hard, durable races which are honed to micro-inch smoothness. This bonus of precision eliminates the problem of run-out and also prolongs the life of the bearing.

... to improve your product  
and your plant equipment, too!



Look closely at Bower Spher-O-Honed bearings. Note these basic refinements in design and construction—generated spherical roll-head and flange surfaces; large oil grooves; precise, durable races.

You'll see they can benefit your manufacturing operation in two distinct ways:

Installed in your product, Bower bearings contribute positive dependability—wear resistance—long life. They can help make yours a better product, better able to meet competition.

Installed in your plant equipment, Bower bearings guard the precision of your machines—boost efficiency—reduce maintenance problems. They improve your ability to produce a quality product.

Whatever you manufacture, from limousines to bulldozers—and whatever plant equipment you use, from machine tools to lift trucks—it will pay you to standardize on Bower bearings.

BOWER ROLLER BEARING COMPANY, DETROIT 14, MICH.

BOWER  
ROLLER BEARINGS



# Detroit Dispatch

Continued from Page 252

## Court Ruling Favors Michigan in Tax Case

Michigan bus and truck operators have lost out in the State Supreme Court in a protest suit against an increase in the state's diesel fuel tax. The companies challenged a 1947 law under which the diesel fuel tax was increased from 3 cents a gallon to 4

cents for vehicles operating under municipal franchise and to 5 cents for all others. They charged that the tax was not uniform and violated the equal protection clauses of the State and Federal Constitutions.

## Trucks Sell at Auto Show

It long has been a moot question among truck manufacturers as to

whether exhibition at an automobile show has any tangible value. However, experience of GMC at the Chicago Show in February has raised the stock of truck show proponents. The division sold a total of 31 units having a dollar value of \$238,500. One order alone accounted for 20 heavy-duty trucks costing \$200,000. In addition, 302 active new prospects were obtained as the result of sales interviews on the floor.

## Truck Sales Picking Up

Truck sales departments are considerably more optimistic now than they have been for several months. In January and February buying started to pick up considerably, and is continuing to gain through the upcoming Spring season. Reasons for the upsurge are not easy to find, but general belief is that with the high scrappage rate of trucks continuing, the replacement market is larger than had been supposed. The latest figures indicate that 448,000 trucks went out of service last year, or about half the number of new trucks sold. In addition, there is apparently still a considerable amount of new business left and dealers now are actively getting out and selling trucks. We again hear estimates that truck production will go over a million units this year with sales totaling about 950,000. It is still too early, however, to make any hard and fast forecasts in view of the slump that hit the industry last Fall. There are some observers in Detroit who think both sales and production will fall far behind last year.

END

Please resume your reading on p. 35

## Another Top Fleet-Owner Cheers The New Stewart-Warner Electronic Wheel Balancer!



Here's what Mr. JOHN A. MURPHY, Vice-President of the Gateway Transportation Company,\* says—

"... Our garage foremen all tell me the Stewart-Warner Electronic unit is the fastest, easiest way to balance wheels accurately—right on the truck! We have used it for over 2 years on our 150 tractors, 89 pick-ups and 40 automobiles. This Electronic Wheel Balancer has materially reduced our maintenance and tire costs. Saves time on every job, too!..."

\*La Crosse, Wisconsin

**IN MINUTES**, this new Electronic Wheel Balancer checks single or dual, front or rear wheels—in true, running position! You avoid costly repairs, replacements and "downtime" in advance! And you increase driving comfort and safety.

Vibrations and pounding on front-end assemblies, tie rods and bushings are eliminated—without removing the wheels from the vehicle. Degree of unbalance is quickly, accurately registered up to 2/1000 of an inch by this easy, Electronic method.

**WRITE TODAY** for complete free information on this easy-to-use unit, produced by Stewart-Warner only. Address Dept. D-40 for rapid reply.



BILL McCANE (right) checks the front left on one of Gateway's heavy hauling units.

**Stewart-Warner Corporation**

Dept. D-40, 1828 Diversey Parkway, Chicago 14, Illinois



"Wanna bet? It'll be a five minute talk on courteous driving, two-minute lecture on care of equipment and a half hour of reminiscence on how he started out as a driver."

# Here's Why Fleet Operators Pick FRAM First



"I performed an experiment with Fram Oil & Motor Cleaners on 60 buses and found the filters definitely extend engine life," says southern bus operator. "The efficiency of these filters has cut our operating costs about 50%."

**BUT**, Fram offers you more than famous Oil & Motor Cleaners . . . more than any other filter maker. Fram offers you Complete Engine Protection.

**Completeness of Line . . .** Fram offers you filters for every fleet job . . . to filter oil, air or fuel on cars, trucks or buses. Cartridges to fit every oil filter made . . . to meet price and performance standards of any method of oil and cartridge change.

**Complete Engine Protection . . .** The utmost in engine preservation and profit saving. Four great Fram Filters, as shown at left, seal in engine performance and profit . . . seal out abrasives at every vital point and remove corrosives where and when they form. A real lifesaver for fleets is the Fram Positive Crankcase Ventilator that licks sludge, combats dilution and saves engines.

**Unconditional Guarantee . . .** You can test any Fram Product without risking a red cent. Your money is refunded if you aren't satisfied.

**Amazing New Fram Lubri-Graf . . .** For the first time, an instant visual check on oil, engine and cartridge condition. Saves you money by indicating cartridge changes only when they're needed. Saves time on fleet maintenance paper work. Increases engine life, gives you lower maintenance cost. Test it! Just send coupon below for FREE Lubri-Graf.



## First with Fleets . . . Famous Fram Oil and Motor Cleaner

Husky, rugged, scientific construction with famous Fram Filron Cartridge for a heart. Removes particles down to one micron (.000039"). Offers highest clean oil flow rate, maximum dirt capacity, longer cartridge life, lowest clean oil cost per mile. Exclusive non-abrasive filtering media won't remove additives from compounded oils. Sturdy metal casing prevents cartridge rupture. Be sure this maximum clean-oil protection is on your fleet.

For Complete Engine Protection

# FRAM

OIL-AIR-FUEL  
FILTERS



## MAIL COUPON NOW

for FREE FRAM Lubri-Graf!

FRAM CORPORATION, Providence 16, R. I.

Please send me FREE Fram Lubri-Graf.

Name . . . . .

Company . . . . .

Address . . . . .

No. of vehicles in fleet . . . . .

We regularly purchase through . . . . .

# The Overload

Continued from Page 19

similarly crimson. We did a little rule of thumb arithmetic and came out something like this, admitting that the example is purely hypothetical. The New York state registration fee for trucks above 1800 lb net weight is 80 cents per hundred weight. That means that the truck which paid \$140 had an unladen weight of 17,500 lb.

In Michigan the rate for trucks over 6000 lb net weight is \$1.25. That means the 17,500 lb vehicle would pay a license fee of \$218.79. To be sure there is an additional 2 mil per mile tax on common carriers in Michigan so that would add another \$100 for an average of 50,000 miles. (This incidentally is almost entirely equalized by

savings from the lower Michigan gasoline tax rate—3¢ instead of 4¢ as in New York). But the figure is still mighty short of \$3,179 quoted in the report. We'd just like to ask how come?

We mentioned that these figures are purely hypothetical since a vehicle of this size would normally be a combination and subject to a great many ramifications. We are advised, for instance, that a tractor-trailer in New York with a 55,000 lb gvw actually pays \$679.20 before it gets underway. No doubt in Michigan the same rig would cost a little more and, of course, the total taxes in both states are enormously higher. But the true picture still comes a long, long way from both the \$140 and the \$3,179 figures quoted. Nonetheless, these are the figures being given the general public in the daily press.

The New York operators, of course, are not taking the situation lying down. They have formed what is called the Truck Owners Protective Committee of New York State with headquarters at 30 Vesey Street, New York 7. The committee has issued a call for financial and physical aid from all hands; built up a mass of rebuttal evidence, and secured a three-month postponement on the hearings. So the battle is on and the developments will bear watching across the nation.

## SAVE THESE *Bendix Drive* TAGS

THEY'RE WORTH MONEY TO YOU!

Smart servicemen everywhere are learning the value of these Bendix Drive tags. They really are worth money to you when they're returned along with your old Bendix\* Starter Drives, to the Bendix Drive Central

Distributor. And that's not all! Don't forget the profit you make when you install new Bendix Drives. Be sure to see your distributor and stock up with genuine parts today.

\*REG. U.S. PAT. OFF.  


ECLIPSE MACHINE DIVISION of  
ELMIRA, NEW YORK

Expert Sales: Bendix International Division, 72 Fifth Avenue, N. Y. 11, N. Y.

INSTALL  
THIS  
DRIVE →



RETURN THE  
OLD ONE WITH  
THIS TAG →



THEY'RE WORTH  
MONEY!  
TO YOU

## Phelps' Fantasy

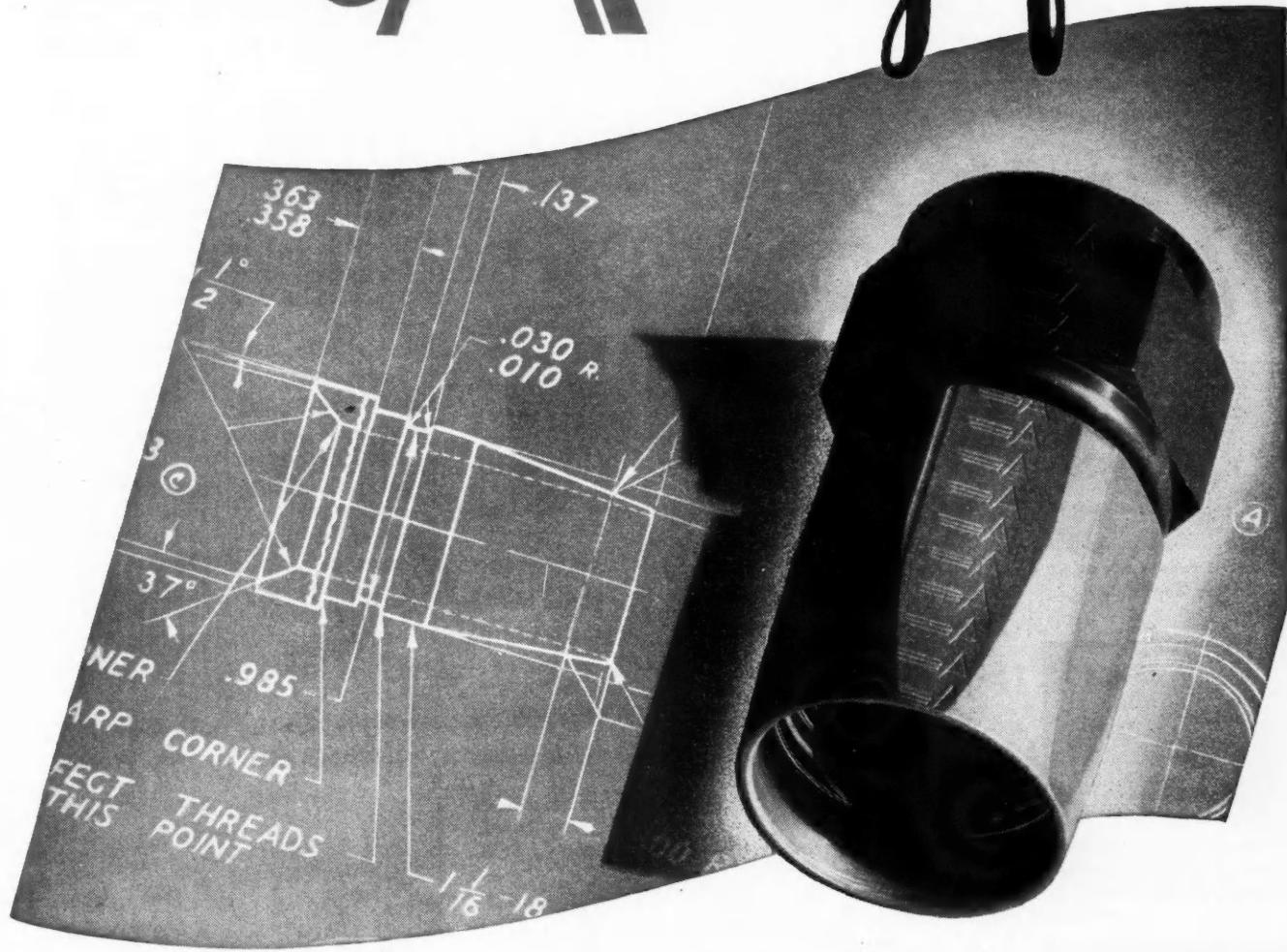
A Travesty on Transportation

ON MARCH 20, just as this issue was going to press, Andrew H. Phelps, vice-president of Westinghouse Electric Corp., delivered an address before the Western Railway Club in Chicago, bitterly condemning what he termed an unfair tax situation between the railroads and highway transportation. Because he and his company feel the way they do about it, Mr. Phelps announced that Westinghouse intends to ship by rail instead of truck *wherever rates and services are comparable*. (The italics are ours).

Although the speech was released on the same date to the public press, very few dailies printed more than a few lines. We believe, however, there are parts of it that no truck operator should miss. For they reflect one or both of two things: A. How good the railroad propaganda is, or B. How poorly the truck operators have told their story. Of course it should be remembered, and Mr. Phelps is quite honest about it, that Westinghouse is a major railroad supplier; has little to sell directly to the truck industry.

(TURN TO PAGE 258, PLEASE)

**A**lways first



Conceived FIRST, developed FIRST, produced FIRST. This is the undeniable record of AEROQUIP DETACHABLE, REUSABLE HOSE FITTINGS. Industry was quick to accept this new and original "Aeroquip Idea." Not only did industry adopt the "Aeroquip Idea," other manufacturers jumped headlong into the manufacture of products they hoped to substitute for Aeroquip Fittings. Imitation is the best form of flattery, but Aeroquip design and quality have never been equalled.

## A E R O Q U I P C O R P O R A T I O N

JACKSON, MICHIGAN

SALES OFFICES 1053 NO. HOLLYWOOD WAY, BURBANK, CALIF. 1215 SO. EAST GRAND AVE., PORTLAND 14, ORE.  
AND WAREHOUSES: 2912 N. E. 28TH ST., FORT WORTH 11, TEXAS 72-74 STAFFORD STREET, TORONTO, CANADA

SALES OFFICES: 303 WAREHAM BLDG., HAGERSTOWN, MD. 1419 2ND AVE., SO., MINNEAPOLIS 4, MINN.

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U. S. A. AND ABROAD

## The Overload

Continued from Page 256

Except for a few parenthetical remarks for the purpose of continuity and a concluding comment, what follows are direct quotes from Mr. Phelps' address. We would rather have readers draw their own conclusions, remembering that Mr. Phelps speaks, with obvious personal convictions, for one of the greatest of all American private enterprises:

### Tax Interpretation

"A story is told about the tax collector who called on the farmer to explain why it is necessary to collect taxes. The collector told the farmer that taxes are necessary to build and maintain his highways, to provide old-age benefits, to feed him when he's hungry, to take care of him when he's sick, and to bury him when he's dead. The farmer replied by saying, 'I see. It's something like the way I feed my dog. When he comes to me looking hungry, I cut off a piece of his tail and feed it to him.'

"Taking money from one form of transportation to feed others, even perhaps to the point of bleeding to death an animal that is taxed, is rooted in the same sort of cockeyed economic philosophy as feeding the animal his tail.

"A long time ago railroad operating managements learned that heavily loaded cars, supported by adequate rails and road beds, increased net operating revenues.

"Highway trucking companies have borrowed from the experience of the railroads in that they have constantly acquired bigger and bigger trucks carrying heavier and still heavier loads. Doubtless, as with the railroads, this increased capacity has increased revenues. Unlike the railroads, the trucking companies assume no responsibility for the building and maintenance of their highways. The increase in weight of trucks has far outstripped the capacity of highways to sustain such heavy loads. This means that the public investment in our highway system is being dissipated far beyond the benefit that accrues to the public or to general industry . . .

"Aided by government subsidies of one kind or another, other types of carriers are diverting from the rails a large volume of traffic, to the serious injury of the railroads. Unless this situation is remedied before materially greater damage has been done, there is a grave threat to the continuance of

(TURN TO PAGE 260, PLEASE)

## Take it easy . . . . . WITH THE NEW **DRUM** *Safety JACK*



SPOT IT—under any axle, from any angle.



SWING IT—Bring dollies into position for removing wheels without lifting.



LEVEL IT—Pull wheels easily without damage to bearings or seals.

### WITH SWIVEL ACTION

Do tire, brake and bearing jobs faster—without breaking your back or crawling under trucks. This heavy-duty jack works anywhere—under any wheel. One man does two men's work with a DRUM Safety JACK.

Use the DRUM Safety JACK for dual wheels, single wheels, or as a floor jack.



- QUICKER
- SAFER
- LIGHTER



### DRUM JACK CORPORATION

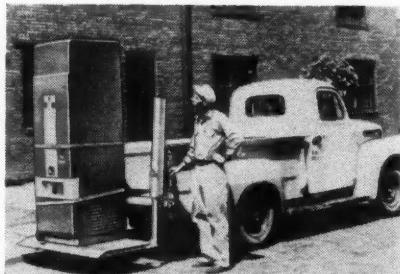
Subsidiary of The Cleveland Pneumatic Tool Company  
3769 EAST 77th STREET • CLEVELAND 5, OHIO, U.S.A.

We would like to know more about the DRUM Safety JACK.

Company \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

### Pick Up Lift Gate Aids Light Truck Work



This new, light weight, "freight elevator" known as a "Pick-Up" Lift Gate which attaches to the rear of any  $\frac{1}{2}$  and  $\frac{3}{4}$ -ton pick-up truck has just been announced by the "Lift Gate" Division of Anthony Company of Streator, Ill.

The "Pick-Up" Lift Gate operated by two powerful hydraulic hoist cylinders makes it possible for the driver alone to lift or lower or stop and hold at any height as much as 800 lb. It makes it possible for him to load or unload heavy, awkward or frail commodities at curb level or ground level. The single lever safety control prevents merchandise damage and stops resulting in provoking delays and claims.

**YOU ALWAYS  
HAVE A  
WINNER—**

**when you choose**

**PACKARD  
AUTOMOTIVE  
CABLE**

You can always count on Packard automotive cable to give you a winner—in economy, performance and endurance—on all jobs under all conditions.

Packard is easy to stock—easy to sell. It is widely distributed—nationally recognized. Moreover, it offers more sales helps and services than any other manufacturer. Clearly marked, self-displayed cartons keep cable clean—give complete size, gauge and application data at a glance.

Yes, Packard is the big winner . . . winner in sales—winner in customer satisfaction. For highest quality, for more miles per replacement, stock Packard cable—chosen as standard equipment on more cars, trucks and buses than all other makes.



**FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING**



**DID 'YA KNOW?**

A single battery supplies the power for a car's entire electrical system. It's easy to see that the cables carrying this big load must be properly installed, carefully serviced and above all built of fine materials. That's why experienced servicemen stock Packard cables. These men know Packard tops them all for performance, endurance and dependability—carries the battery power on more automobiles than any other make.

**Packard Pete**



## The Overload

Continued from Page 258

rail transportation in this country as a private enterprise. We must depend upon the railroads to help hold the front-line trenches of industry against nationalization . . ."

(Mr. Phelps then cited several highway studies including one made by the State of Illinois playing up the old "saw" about registration fees in relation to ton-miles, following with a dis-

sertation on how the truckers were able to pick and choose their loads, while the railroads have to take all. He concluded that part with these remarks:)

"In competing for high-grade products, the trucker is often able to quote lower rates for selected traffic items because of two factors. The first, already mentioned, is that part of the trucker's cost is from general taxation, through the use of public facilities without adequate payment therefor . . . The second factor is that, with no interest in or responsibility for the movement of low-grade raw materials and other

essentials of production, the trucker has a wider average margin between revenues and costs of service and can afford to shade the rail rates for the high-class traffic enough to obtain the haul."

(He then had some able remarks with regard to flagrant overloading with which unfortunately no one can disagree. Then he began his summation of how to correct the "evils" of the trucking industry:)

### Advice to Shippers

"There are certain things which users of transportation can and should do for the improvement of these conditions. One is to assume leadership in stimulating awareness of these conditions and of the necessity, in their own interest, to remedy the damage caused to railroads. There is scarcely an industry in the country—certainly not a heavy industry—which could operate without adequate, efficient, and economical railway service. Anything which injures the railroads is harmful to industry . . .

"On the legislative level, the most important and helpful step would be to support the enactment of legislation requiring all commercial truckers to pay for their use of highways on a basis commensurate with the cost of the facilities necessary for their operation. One practical step would be the elimination from the Federal Highway Act of 1916 (and amendments) of the restriction against collecting tolls on highways financed in part by federal funds, at least in so far as relates to commercial use of the highways. There is no sound or logical reason why those utilizing public highways for private profit should not pay their full costs. It is manifestly unjust to allow public facilities—highway, river, or other—to be used on terms which create unfair competition with railroads.

"At the same time, there should be such restrictions on truck sizes, weights, and speeds as are necessary to prevent injury to the public highways and to protect the public safety. *The operation of large trucks should be barred by law except on highways specially designed to sustain their weight.* (The italics are ours.) They should likewise be required to pay fees which would fully compensate for the increased cost of constructing such highways over and above the cost if designed for ordinary vehicles. Alternatively, the operators of such trucks might be required to provide their own highways designed for such traffic. If it be argued that the truckers could not afford to continue to serve in the face of such restrictions, then the obvious answer is that the service now rendered lacks economic jus-

(TURN TO PAGE 262, PLEASE)

## For Top Flight Gas Welding

Choose from AIRCO'S complete line of



### Oxyacetylene Welding Supplies

Time Proved . . . Job Tested  
... Money Saving

Available from Local Stocks

That's right! Whether you use a popular Aireo gas welding rod, flux, or brazing alloy for production or maintenance operations . . . you're certain of top-notch work—ask any one of the thousands of welders who swear by these Aireo oxyacetylene welding supplies.

This well-recognized reputation for top performance didn't just happen—more than thirty years' experience and development have gone into the manu-

facture of these outstanding gas welding supplies . . . know-how that produces high quality, reasonably-priced items that guarantee a job done faster, done better, done easier and done at less net cost.

*For further information about Aireo's oxyacetylene welding supplies which includes a complete line of rods, fluxes and brazing alloys, write your nearest Aireo office or Authorized Dealer for a free copy of Catalog 12.*



## AIR REDUCTION

Offices in Principal Cities

Headquarters for Oxygen, Acetylene and Other Gases . . . Calcium Carbide . . . Gas Cutting Machines . . . Gas Welding Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

GENUINE  
**BOHNALITE**  
PRODUCTS

NEW SERVICE DIVISION  
HEADQUARTERS NOW  
LOCATED AT HOLLAND, MICH.

(FORMERLY CLAWSON & BALS)



GENUINE  
**BOHNALITE**  
PRODUCTS

- |  |                               |
|--|-------------------------------|
|  | Pistons                       |
|  | Engine Bearings               |
|  | Reconditioned Connecting Rods |
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|  | Piston Pins                   |
|  | Water Pumps                   |
|  | King Bolts                    |
|  | Valve Springs                 |
|  | Rod Dippers                   |
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|  | Bolts                         |
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Pioneers of the World's Most Advanced Pistons  
for Leading Automotive Manufacturers for 35 Years!

Millions of NELSON BOHNALITE AUTOTHERMIC PISTONS have been made and sold to the leading automotive manufacturers for original equipment during the last 35 years. Those many years of accumulated experience in the development and production of these famous pistons, and other GENUINE BOHNALITE PRODUCTS from eleven great plants are your assurance of superior quality and performance when you order GENUINE BOHNALITE PRODUCTS from the Bohn Aluminum & Brass Corporation, Service Division. Jobbers and dealers everywhere are insisting on NELSON BOHNALITE AUTOTHERMIC PISTONS.

**BOHN ALUMINUM & BRASS CORPORATION**  
Executive Offices • Detroit 26, Michigan  
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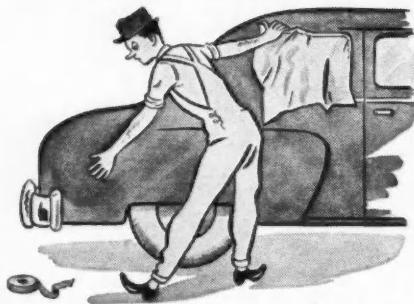


# New Booklet!

**SHOWS YOU HOW TO  
SPEED REPAINT  
SCHEDULES—  
CUT COSTS—  
WITH HELPFUL TIPS  
ON MASKING!**



Want to take the mess out of masking? You'll know how when you read page 5!

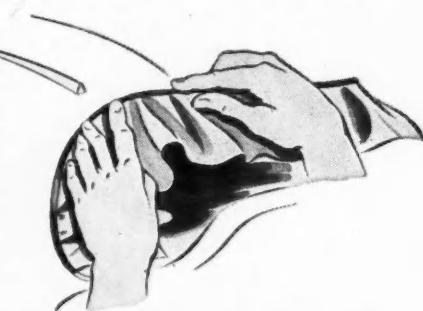


Oh that tape! Want a convenient way to keep it at your finger tips? See page 13!



and...

would you like to see a complete, portable masking department on wheels? You'll find it—and the answer to better masking—on page 10!



For an easy, time-saving tip on masking headlights—just turn to page 18!



**Send for your  
FREE copy today!**

Twenty-five pages of masking procedure, complete description of Permacel's new Portable Masker. Write Dept. 11A at address below.

**Permacel®-77**  
**MASKING TAPE**

INDUSTRIAL TAPE CORPORATION • NEW BRUNSWICK, N. J.

## The Overload

Continued from Page 260

tification and that they should not in justice be allowed to continue it, making others help pay their way by shouldering a portion of the costs.

Certainly there is no sound justification for the imposition of a heavy burden upon other highway users or upon the general taxpayers to provide special highways for big trucks and to pay for repairing the damage they do to the highways. The point of special interest for present purposes is that it is mainly, if not entirely, through the use of these big trucks that the operators are able to stay in business, compete with, and often undersell the railroads.

"Again, there is sound justification in the public interest for efforts to overcome the present ability of commercial highway carriers to "pick and choose" their freight. If a trucker wishes to enjoy the benefits of certification as a common carrier, it would appear to be entirely proper that he should be a common carrier *in fact*, as well as in name. He should be required to accept any and all freight within the physical capacity of his equipment to handle, and not permitted to skim merely the cream of the traffic."

(From there Mr. Phelps turned his spotlight on the railroads themselves. After beseeching others to come to their aid, he finally suggested they might do something to help themselves.)

### Suggestions for Railroads

"Railroads must explore earnestly and constantly all possible avenues that lead to reduction of costs. While individualism must not be throttled, because from competition among railroads have come major gains to shipper and public alike, individualism must not stand in the way of such measures of cooperation as will reduce costs.

"Then, too, railroad management should explore all possible avenues to increased efficiency. To this need management has become increasingly alert, as is evidenced by progressive dieselization, by increased mechanization, and by other developments. Yet, even more must be done if existing threats are to be effectively met. Never did the rail-

(TURN TO PAGE 264, PLEASE)

\*\*\*\*\*

### J OBSERVATION

You can get in the chips without bearing one on the shoulder

\*\*\*\*\*

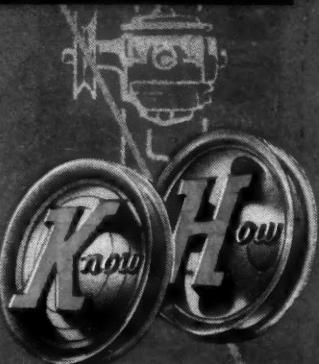
COMMERCIAL CAR JOURNAL, April, 1950



Symbol of for Over 40 Years!

KELSEY-HAYES WHEEL COMPANY PLANTS:

- Four Kelsey Hayes Plants in Michigan
- McKeesport, Pennsylvania • Davenport, Iowa
- Los Angeles, California • Windsor, Ont., Canada



## The Overload

Continued from Page 262

roads have more pressing need of discerning leadership than today.

"Since the success of competitive forms of transport is due to service rendered, quite as much as to rates charged, accustomed methods of procedure and performance must at all points be challenged. Operations within terminals, the movement of freight cars within and through yards result

in long delays. It is a known fact among shippers that there are wide differences among railroads in matters of service. There seems to be no reason why the performance of the laggards should not approximate that of the best with respect to service matters.

"Still further improvement in the safe handling of freight must be effected. Much has been done since the war. Shippers have given, and will continue to give, a large measure of assistance by adequate packing and stowing. The railroads, through improved supervision

and careful education, can reduce the tremendous costs of loss and damage claims. By way of illustration, one company was suffering excessive damage claims on a nationally distributed product. Analysis showed that half of all loss and damage suffered occurred to shipments which moved in connection with one small terminal line. When the management of this terminal carrier was alerted, steps were taken which almost overnight eliminated half the damage claims on this product.

"Some railroads have sought to supplement rail operations with operations upon the highway for local pickup and delivery. This has often resulted in improved service and reduction of costs. Greater efforts along this line should be made by railroad management to coordinate highway and rail service to provide a complete and speedy service to the shipper. Either through a greater degree of coordination, or *integration under single ownership*, such joint operations should be extended." (The italics are ours.)

"All hope for the railroads is not lost. They can do a very great deal in curing their own ills.

"First, it must be recognized that trucks have a definite and proper place in transportation. They provide speed and service on short hauls. The railroads may, perhaps to their own advantage, adjust rates to encourage trucks in the short haul and to discourage them on the long haul.

"Second, the level of class rates is generally out of adjustment with commodity rates. Certainly successive increases in rail rates aggregating approximately 57 per cent since the war

(TURN TO PAGE 266, PLEASE)



(GEIGER-KNIGHT CREEPER)

("LITTLE JOE" HANDY SEAT)

Take This Tip from Crack Service Manager Ray Allison —

### "Help Your Men Work Faster and Easier With These Pieces of Efficient Equipment"

As Service Manager of Jerry McCarthy of Detroit, one of the world's largest Chevrolet Dealers, Ray Allison has the same problem that you have —

*How to help his Service Men work at top efficiency.*

Here's one way he does it—just like you see in the two pictures above—

*He gives his Men the best possible equipment so that they can work faster and easier.*

He provides them with Geiger-Knight Auto Creepers—the Creeper which . . . because of its famous patented casters and patented\* stamped steel wheel housings . . . works faster and easier, especially over rough floors.

He provides them with Geiger-Knight Little Joe Handy Seats . . . which enable his men to repair brakes faster and easier than anything else he has tried.

Are you missing these two excellent Geiger-Knight bets? Take Ray Allison's tip. Find out about them today.

\* Patent Pending

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And Your Nearest Dealer



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*(Geiger-Knight)*  
**AUTO CREEPERS and CASTERS**  
Clinton Products Co. • Clinton 10, Mich.  
In Canada: Advance Steel Products Ltd.,  
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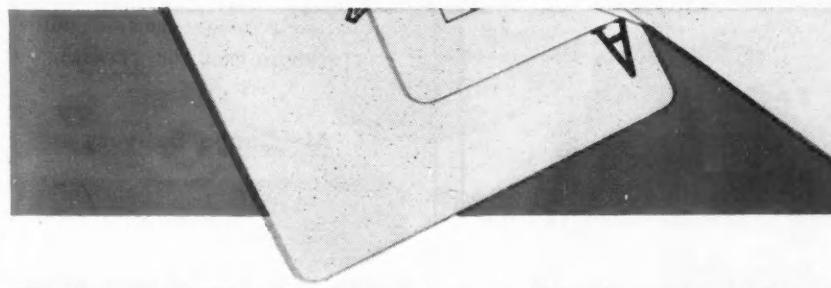


Chances of a serious delay in reaching telecast scenes have been eliminated by Philco Television Station WPTZ in Philadelphia by use of a tractor-trailer combination for mobile telecasting. Should the tractor fail for any reason prior to any on-the-spot telecast, another tractor can be coupled to pull the transmitter-trailer to the scene of the event. Trailer was manufactured by Trailmobile Co. of Cincinnati

# Best Bet..



## FITZGERALD Metallic Aluminum-Fused-Oxide Steel Asbestos GASKETS\*



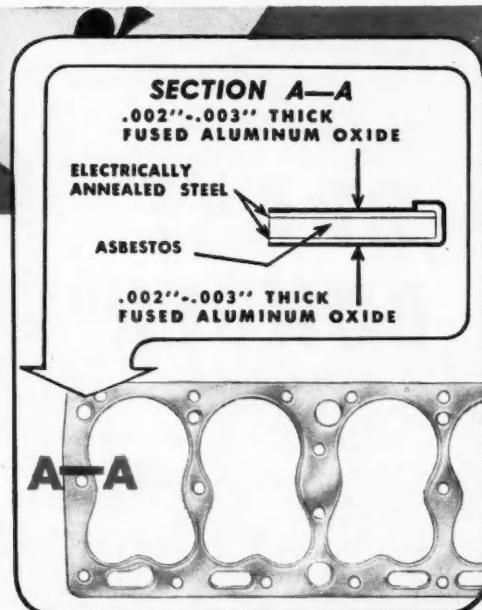
A perfect seal is in the cards with Fitzgerald Metallic Aluminum-Fused-Oxide Steel Asbestos Gaskets.\* They top all others in high compression engines because they're engineered to withstand the greater heat and pressures that cause other gaskets to fail.

Steel, especially tempered for toughness and resiliency, provides the vital strength. Fused aluminum oxide prevents rust, means easy removal. Top quality asbestos filler rounds out the perfect combination . . . the result of nearly half a century of gasket craftsmanship.

  
President

THE FITZGERALD MANUFACTURING COMPANY  
Torrington, Connecticut

COMMERCIAL CAR JOURNAL, April, 1950



**FITZGERALD**  
*Gaskets*  
SINCE 1906

Grease Retainers—Cork Gaskets—FITZ-Rite Treated Fiber Gaskets for oil, gasoline and water connections

COMPLETE SETS FOR MOTOR REBUILDERS

\*Service Mark Registration Pending

## The Overload

Continued from Page 264

are conservative when compared to other price increases. The four general rate increases granted since the war have been percentage increases, however, with the result that charges upon the high-rated traffic now are out of line and make that traffic most attractive to trucks.

"For example, it probably costs a railroad little more, if any, to trans-

port a carload containing 100,000 lb of machinery from New York City to Los Angeles than it costs to move a 30,000-lb carload of carrots. Yet the carload of machinery would pay \$3,660 in freight charges, while the carrots would pay \$603, or about one-sixth as much. The carrots would move in expedited freight service, obviously more costly to the railroads, would require extra switching for service en route, and would require a more costly type of car.

"Let us take another example. A carload of oranges weighing 39,200 lb mov-

ing across the United States would pay \$694 in freight charges. A carload of ordinary lamp bulbs weighing 15,000 lb, less than half as much, would pay \$716. The carload of fruit requires a special-type car far more costly than that required for lamp bulbs.

"A 60,000-lb carload of lumber moving from Baker, Ore., to Jersey City, N. J., would pay \$716 in freight charges. The same weight of elevator machinery moving the same distance would pay \$2,196. Trucks would not haul the lumber, but they do solicit the machinery which pays a rate three times higher.

"What can be the result if the railroads leave themselves exposed to the loss of their profitable traffic to the motor carriers? There is one inevitable result of operating a business without profit. . . .

"By reason of recent freight rate increases, it is presumed that low-rated products now pay their own way—or more nearly pay their own way. Is it unreasonable to expect that high-rated products of our mills—some might say overrated—should be adjusted to meet competition? Such a move would be in the interest of the railroads, or of industry at large.

"This situation would not be so alarming were it not for the fact that this most desirable of all traffic, the high-rated manufactured goods, is being most actively sought and is shifting

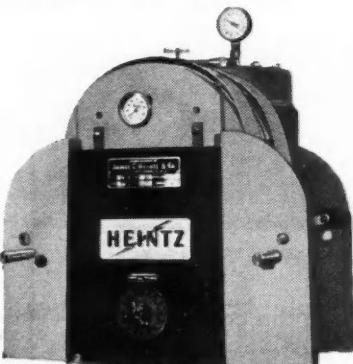
(TURN TO PAGE 268, PLEASE)



## BRAKE LINING REPLACEMENT COSTS

WITH THE  
*Sensational New*  
**HEINTZ**  
**ELECTRIC**  
**BRAKE**  
**BONDER\***

\*FEATURING . . . FOLLO-THRU PRESSURE



Bonded brake linings offer from 30% to 100% more lining life. Take advantage of the important savings to be effected by switching your fleet to bonded linings NOW!

Make that money-saving change with the finest bonding equipment available . . . the HEINTZ ELECTRIC BRAKE BONDER, the bonder that research built; the bonder that, due to its revolutionary new heat and pressure application principles, is so far superior to all others that it is acclaimed by truck manufacturers, lining manufacturers and fleet owners alike as THE answer to replacement bonding.

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JAMES C. **HEINTZ** & CO.  
INC.

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30 Years' Experience in the Manufacture of  
Automatic Heating Units and Controls



## Air Cargo Delivery



The Fredrickson Air Rush White tractor-trailers shown in the upper view, is a typical unit of the new state-wide ground link service for air cargo, now operating in North Carolina. Textile products are picked up and delivered daily, to the Charlotte airport for transport by air to the West Coast. Progress is illustrated by the comparison with the White truck and touring car, shown directly above, which were used in the early twenties, by the U. S. Airmail Service for their ground delivery service.

# If's the Best Motor Oil known to Science



(Partial view of the enormous new lubricating oil plant at Lake Charles, La., where this great new oil is processed.)

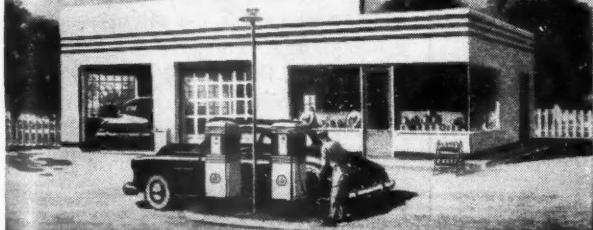
## "ANTI-FOULING" OIL made by the Remarkable new "HEART-CUT" PROCESS

This new oil—the best known to science...  
gives you a cleaner engine...more economy  
...minimum carbon residue.

It's here now! The remarkable motor oil from the giant new \$42,000,000 lubricating oil plant at Lake Charles, La. The plant that's been the big talk of the oil industry for months.

New Premium Koolmotor is made by the unique "Heart-Cut" Process which retains only the choicest part of the finest crudes. It's so superior that in recent engine tests it outscored nine other major premium motor oils. No wonder Premium Koolmotor is better in every way! Cleans better, seals better, cools better and fights acid, sludge and corrosion far more effectively. Switch to this remarkable new oil today.

start saving Dollars today...stop at  
**CITIES  SERVICE**



## The Overload

Continued from Page 266

from the rails to highway transportation. . . .

"Next, railroads can and must improve their service. It is imperative that they do so to prevent further inroads on their desirable traffic by highway competition. It should be borne in mind by railroad management that it will not be easy to regain traffic that

is lost by reason of poor service. . . .

"Now—to give point to the sincerity of our convictions on this matter of rail and highway transportation, let me add one word. For the past two years this subject has had intensive study in the company I represent. On December 6, 1949, our studies led to the announcement of policy to our management and traffic personnel which said, in effect:

"(1) Railroads are to be used for all Westinghouse shipments unless trucks offer important advantages in services or lower rates.

"(2) Whenever truck rates are lower than rail rates, the railroads are to be given an opportunity to make adjustment which will enable us to ship by rail at competitive rates."

That is the conclusion of Mr. Phelps' speech. Had we more room, we could, of course, take rather violent exception to many of Mr. Phelps' remarks, particularly those implying that very shop worn phrase about a "Free ride for trucks." But we would prefer, as stated in the beginning to let the operators draw their own rebuttal. We'd just like to end up with this poser: How much of Westinghouse freight moves by truck in spite of the desperate effort the company is making to support its rail customers? When we tried to get the answer we were told that that information "would, of course, be highly confidential." But we understand there is good reason to believe the percentage is very substantial.—C.B.R.

END

Please resume your reading on P. 23

## RANDOLPH'S RIDDLES

### Tool Conversion

Ever wish you could change one tool into another? Here we show you how it can be done in seven moves. Beginning with the word JACK, simply change one letter at a time and form a new word each time according to the definitions until the word PUMP is reached.

J A C K

Bundle	— - - -
Step	— - - -
Glass	— - - -
Corn bread	— - - -
Apple	— - - -
Splendor	— - - -
P U M P	

Answer on Page 270

## RANDOLPH'S RIDDLES

### Rookie 'Rithmetic

Five rookie mechanics had to identify the makes of five trucks. The trucks were numbered from one to five. Each rookie had to pick the right name for each truck from a list of five names on a blackboard. The first rookie got one name right, the second got two names right, the third got three names right, the fourth got four names right, and the fifth got five names right. What was their average score?

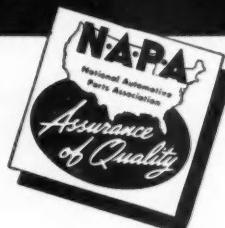
Answer on Page 270

COMMERCIAL CAR JOURNAL, April, 1950

## FEDERAL BALL BEARING OF THE MONTH



from the most  
complete automotive  
ball bearing line  
anywhere!



★ Order FEDERAL  
BALL BEARINGS  
from Your  
NAPA Jobber  
or Warehouse

The superfine race finish in the Federal Clutch Release Ball Bearing Line prevents overheating. The U-type ball retainer in the pure thrust type seals-in and holds the original grease in the race-ways . . . assures permanent lubrication to rotating balls without leakage. Federal Clutch Release Bearings are made in every original equipment size.

### Add Up These Advantages of FEDERAL BALL BEARINGS

1. Complete coverage—Immediate Jobber service backed by complete warehouse and factory stocks near you.
2. Original equipment acceptance—Proof of quality and customer satisfaction—a powerful sales tool.
3. Obsolescence protection—Every bearing in the Federal line is classified according to market demand and fully protected against obsolescence.
4. Complete application catalogs—include all automotive equipment through 1949 and latest complete interchange information.
5. Complete price information—Easy-to-read and complete suggested re-sale schedules at competitive prices.



## FEDERAL BALL BEARINGS

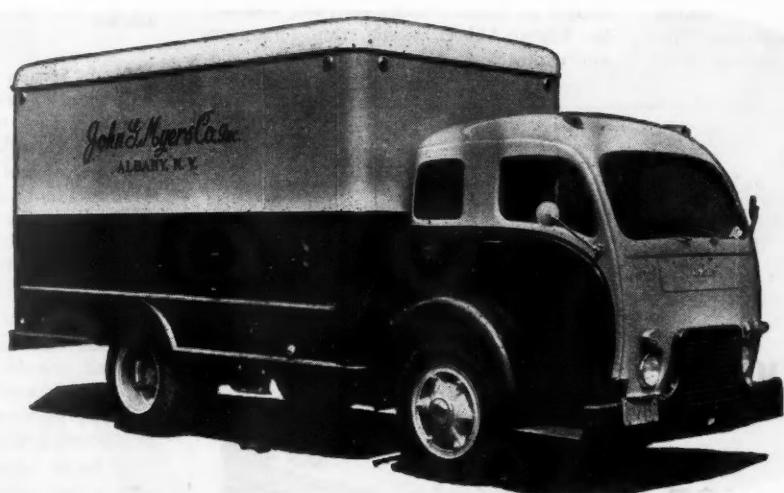
THE FEDERAL BEARINGS CO., INC., Poughkeepsie, N. Y.

ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS

Quality Since 1908

# A 130-Horsepower Billboard

## THAT MAKES AN IMPRESSION



### It will be a good impression if you have a DeVilbiss Complete Paint Shop

Pre-sell your company's good name to people who know you only by seeing your trucks on the road. Re-sell your company's reputation to regular customers who see your trucks often. Neat-looking, well-maintained trucks help sell your company, help sell your product.

In the well-lighted, well-ventilated DeVilbiss Complete Paint Shop, your maintenance men can turn out professional repaint and maintenance jobs right on schedule. There's no danger or annoyance

from paint fumes floating into the rest of the shop, nor of dirt marring fresh-finished surfaces. The DeVilbiss Complete Paint Shop includes: DeVilbiss Air Compressors, specially designed to give you even more air for your money . . . DeVilbiss Spray Guns which are preferred by the majority of professional painters . . . DeVilbiss Hose, fabricated to stand up under severe spray painting service. All the other accessories included in this modern paint shop are made by DeVilbiss—leading manufacturer of spray-painting equipment.

Write today for the complete DeVilbiss catalog.

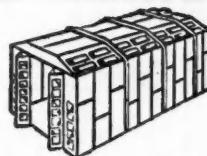
**THE DEVILBISS COMPANY • Toledo 1, Ohio**  
Canadian Plant: WINDSOR, ONTARIO



Spray Guns



Air Compressors



Spray Booths



Hose and Connections

# DE VILBISS



*means Quality in all four . . .*

SPRAY EQUIPMENT  
EXHAUST SYSTEMS  
AIR COMPRESSORS  
HOSE & CONNECTIONS

## INDUSTRY BRIEFS

Achieving the best safety record in its history, General Motors was recently granted the National Safety Council's award of honor for distinguished service to safety. The company-wide accident rate (number of accidents per million man hours worked) for General Motors in 1949 was 2.57, an improvement of 19 per cent over the 1948 record. Under regulations of the American Standards Association, this is the lowest rate ever achieved by GM employees. The same is true for the 1949 severity rate

(number of days lost per thousand hours worked) which was .428 representing a 22 per cent improvement over 1948.

Brown Equipment & Manufacturing Company, with headquarters at 1775 Broadway, New York City, and plants at Charlotte, N. C., Syracuse, N. Y., Springfield, Mass., and Taunton, Mass., has joined TTMA as a trailer manufacturing member.

International Plainfield Motors, subsidiary of Mack Trucks, Inc., has awarded to Wigton-Abbott Corporation, engineers and contractors of Plainfield, N. J., a con-

tract for the design and construction of a large modern addition to its present manufacturing plant in Plainfield.

Hunt-Spiller Mfg. Corp. announces that they have re-entered the brake drum manufacturing field with a new material that eliminates heat-checking in almost all cases and substantially reduces squeal. In addition, this material is giving exceptional wear on actual applications with commercial fleet operators of buses and trucks.

Nash Motors' first Canadian built car will soon be available to Canadian motorists, according to George W. Mason, president of Nash Motors of Canada Limited, Toronto. According to T. S. Adams, Nash Motors Plant Manager, Toronto, "Interior work on the new manufacturing plant is nearing completion. When completed, it will be one of the most modern automotive plants in Canada," he said.

All construction work on the new plant is being carried out by Canadian workers and all possible production machinery is being purchased in the Dominion. Nash will employ more than 300 Canadians when production begins this Spring, he said.

A large replacement parts warehouse, with a floor space of 23,500 sq ft, is being built on the factory site, to assure availability of parts for Canadian Nash owners.

Radiator Specialty Co. of Charlotte, N. C., will very shortly complete installation of a Rubber Products Mill within the factory grounds at Charlotte.

Russell Mfg. Co., Middletown, Conn., will establish a branch manufacturing plant at Lexington, S. C., for the production of nylon and cotton narrow elastic fabrics.

The Vac-U-Matic drainer drains crankcases and oil filters; syphons off radiator solutions; removes water from fuel tanks and operates by vacuum off any airline. Supreme Equipment Corp., Cleveland, Ohio.

## A NEW DIMENSION IN CLUTCH SERVICE

You get *more miles* of trouble-free service from these new, complete clutch units. Take *less time* to install, too! And you're *sure* of full clutch release and smooth clutch engagement.

### **Cost the Same . . .**

. . . although you pay only the *regular* price for the new Accurate Powerflex clutch plate and the rebuilt Re-Nu assembly, you get the *PLUS VALUES* of a matched, mated, tested, balanced, complete clutch unit at *no extra cost!*

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REBUILDERS OF GUARANTEED CLUTCH ASSEMBLIES

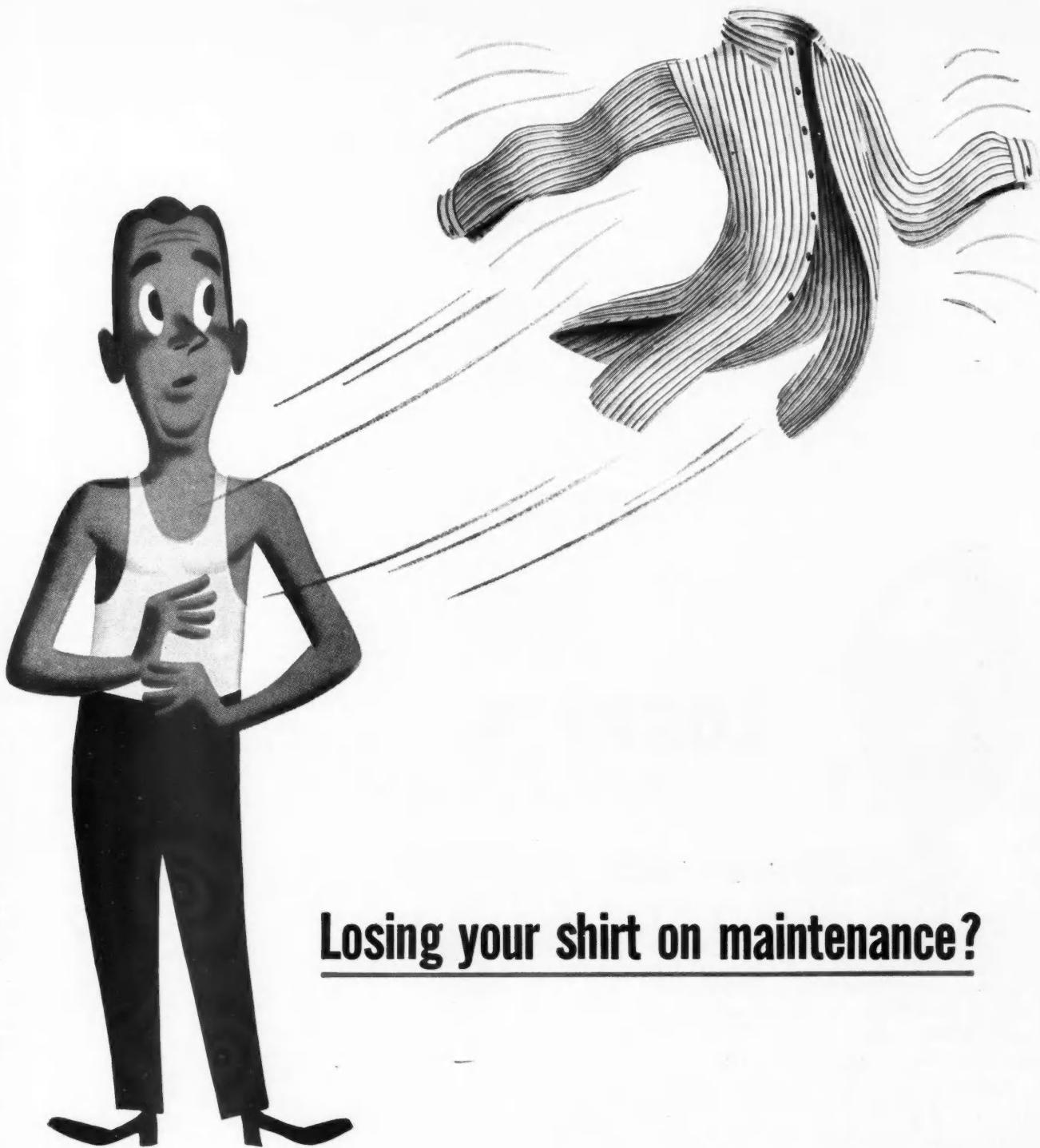


### **Tool Conversion SOLUTION**

JACK  
PACK  
PACE  
PANE  
PONE  
POME  
POMP  
POMP

### **Rookie 'Rithmetic ANSWER**

3.2—The fourth could never get four names right without getting the fifth one right also. If you noticed this discrepancy in the statement and refused to go ahead with the problem on account of it, you may also consider yourself right.



## Losing your shirt on maintenance?

If a large part of maintenance expense goes for engine repairs, chances are, Quaker State HD Oil could save you money!

Quaker State HD Oil is specially made to prevent wear in heavy duty use. Made from 100% pure Pennsylvania grade crude oil, it's refined with the most modern processing equipment and with technical skill

unsurpassed in the industry.

Even under toughest operating conditions, it keeps its body, lubricates thoroughly, protects every friction surface. It helps prevent formation of sludge, gum, varnish—actually *cleans* as it lubricates!

There is no finer engine lubricant, so switch over to Quaker State HD Oil—and keep 'em rolling!

**QUAKER STATE  
HD OIL**  
AND SUPERFINE LUBRICANTS

Use Quaker State HD Oil for trucks, buses, taxis, tractors.  
Use Quaker State Motor Oil for passenger cars.

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

# FACTORS AFFECTING Torque Converter Operation

A review of general characteristics, correct application, and maintenance training pointers to gain maximum benefit from that increasingly popular component transmission unit

By Robert S. Lee  
Twin Coach Co., Kent, Ohio

## Streamlined Beauty Built For Heavy Duty THE NEW **LORRAINE** Driving Light



Safety . . . convenience . . . beauty . . . rugged durability—they're all combined in the New Lorraine—more than ever the World's Finest Driving Light.

A flick of the fingertips controls the exclusive Lorraine Rotary Switch. The sealed beam lamphead rolls smoothly, continuously, through a full 360-degree radius. Lorraine Wireless construction guards against shorts.

For better vision on the highway, more convenience in town—greater safety anywhere, outfit your fleet with Lorraine Driving Lights. Write for detailed information and name of jobber nearest you.

### New Lorraine Utility Light For Roof Mounting



Lamphead turns full 360-degrees both horizontally and vertically. Equipped with leak-proof bracket. Illuminates working areas to the front, rear, left, right or on the ground. Ideal for maintenance vehicles, wreckers, service vehicles, snow-plows and utilities trucks.



**APPLETON ELECTRIC COMPANY**

Manufacturers of Appleton and Lorraine Spotlights

1724 WELLINGTON AVENUE • CHICAGO 13, ILLINOIS

THE ADVANTAGES obtainable by the use of torque converters can be fully attained only when all factors affecting their operation in each particular instance are taken into consideration and carefully balanced. The torque converter is only one unit in the power train, and the importance of matching engine characteristics, rear axle ratios, and average road speed requirements cannot be over-emphasized.

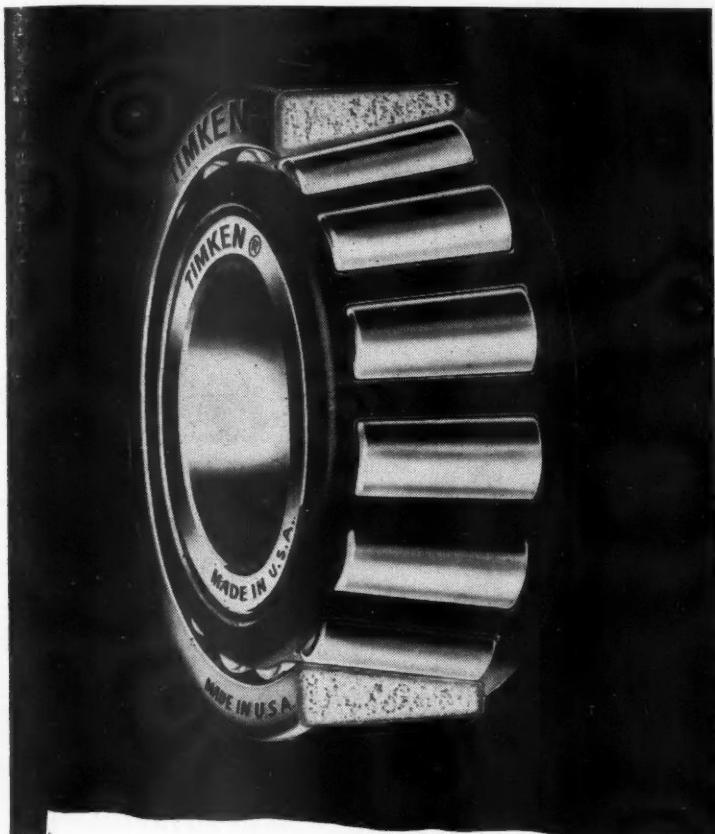
#### General Characteristics

CERTAIN fundamental principles of operation of the hydraulic torque converter govern its application to today's transit problems. The true torque converter is not a fluid coupling but a torque multiplier. It provides rapid acceleration, and an infinite number of torque ratios, and the torque supplied by the converter is governed by vehicle requirements.

We speak of maximum torque multiplication as approximately 5.5 to 1 at "stall." "Stall" simply means that the engine turning the turbine pump is running at full throttle, zero manifold vacuum, while the turbine rotor wheel is held stationary. As the rotor wheel begins to turn, the ratio of torque multiplication decreases as rotor speed increases and the spread between input and output speed diminishes.

In actual operation, the coach begins to roll when engine speed is increased to 400 rpm. If the throttle is opened fully, engine speed rises rapidly to around 1200 rpm, and then increases gradually to 1800 to 1850 rpm as coach road speed and turbine

(TURN TO PAGE 274, PLEASE)



## Beats friction

In actual service the Timken® tapered roller bearing does all those things a perfect bearing should do.

There are many good reasons for this: Timken bearings have true rolling motion. With full line contact between rolls and raceways, they retain their full friction-reducing qualities under the heaviest loads. And tapered construction enables Timken bearings to take radial and thrust loads—or any combination.

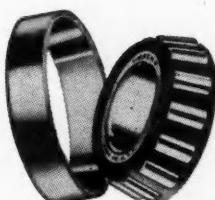
Only Timken tapered roller bearings have all these advantages: (1) advanced design, (2) precision manufacture, (3) rigid quality control, (4) special analysis steels. They are first choice with leading truck manufacturers.

Make sure the tapered roller bearings you use for replacement always are marked "Timken". And send now for the free booklet, "Timken Tapered Roller Bearings, Their Care and Maintenance". Write Dept. JC-4, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

*Another reason why  
TIMKEN® bearings are first choice  
with truck manufacturers*

SINCE THEY'RE BEST  
WHEN THE TRUCK IS  
NEW, THEY'RE BEST FOR  
REPLACEMENT, TOO!

**TIMKEN**  
TRADE-MARK REG. U. S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**



NOT JUST A BALL   NOT JUST A ROLLER   THE TIMKEN TAPERED ROLLER   BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION



## Torque Converter Operation

Continued from Page 272

rotor speed increases. When the speed of the turbine rotor reaches a value approximately 2/3 that of the engine and pump, the converter is operating at maximum efficiency.

From a standpoint of economy, the shift from turbine to direct drive should be made as close to this point as possible. However, load factors and grade conditions in certain instances make a shift at a slightly higher speed, where the torque ratio is approximately 1:1, more desirable.

An automatic gear type shifting mechanism is used to obtain the change from turbine to direct drive to eliminate the difficulties encountered with a friction clutch. The shift from turbine to direct drive is electro-pneumatic and is controlled by a fly-weight governor driven by an internal gear turning at drive shaft speed. Balked shoulders are provided within the direct drive unit to delay the meshing of the clutching teeth until the shaft speeds are synchronized. This synchronization is obtained by means of an air-operated electrically controlled throttle dip actuated by the shift fork.

When engine speed falls below drive shaft speed, a roller clutch within the direct drive unit unlocks the balk mechanism and permits the meshing of the clutching teeth. Smooth engagement is attained through the incorporation of a simple synchrolock.

(TURN TO PAGE 276, PLEASE)

### Custom Built Wrecker



Designed for the New York City Department of Sanitation, this Ward La France 6 x 4 tandem drive, COE wrecker features a double alloy steel heat-treated frame, and aluminum cab. It is equipped with two rear 10-ton winches, pintle towing hook, two hydraulic stabilizer jacks, front bumper and pusher plates, spot and warning lights. Unit is powered by a 779 cu.in. gasoline engine.

# Kester Solder



When the boys in the shop talk about solder, they talk about Kester Acid-Core Solder; the old reliable product now in a new package.

## Easier to Use

Mechanics know that using Kester makes any soldering job easier. Kester contains more grade A newly mined Tin—40%—and only virgin lead, too. The fluxes are chemically and scientifically correct.

## Faster

Kester is faster to use. Mechanics prefer it and are more satisfied when using it. The work is speeded up and output is increased.

**Kester Solder Company**  
4201 Wrightwood Ave., Chicago 39  
Newark, N. J. • Brantford, Canada

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SOLDER



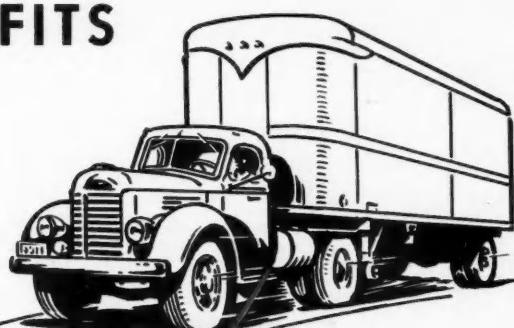
The Mechanics Standard since 1899

# ON THE ROAD TO PROFITS

# Prior

## SAFETY TANKS

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2. 12-Gauge Steel
3. Electrically Lap Welded
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5. Quick filling
6. Fill Vent to prevent expansion overflow
7. Ball Check and Seat in Cap to prevent leakage in event of truck upset.
8. Pilfer-Proof Baffle
9. Brass Filler Cap, Swiveled and Chained
10. Safety Flame Fuse Plug—Replaceable
11.  $\frac{1}{2}$ " Drain Plug in bottom
12. Fully Dished Heads
13.  $\frac{5}{16}$ " Fuel Line with Pick-up close to bottom
14. Brace for Pick-up Line, Welded in place
15. Anchor for Pick-up Line, Welded in place
16. Pressure Tested for Safety
17. Listed under Underwriters' Laboratories, Inc. Re-examination service
18. Rust Proof Prime coated
19. Guaranteed against defects in materials and workmanship
20. Guarded Fuel Line Outlet



Shave operating and maintenance costs—and you add to profits. This is the principle on which *Prior Safety Tanks* are designed. All *Prior Safety Tanks* are as well-finished and attractive as any part of your modern truck or trailer, and can be furnished in either the OB-Round or Cylindrical type. OB-Round tanks hug the frame, and there is no frame drilling or welding necessary on any *Prior tank*.

**A stock size to fit every need—or we build to meet your requirements**

MAIL TO THE NEAREST ADDRESS

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Box 7608, Dallas, Texas

Please send me complete information on *Prior Safety Tanks*

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CITY \_\_\_\_\_ STATE \_\_\_\_\_

**"MILEAGE MASTER" COMES IN FOUR SIZES: 105, 120, 135 and 150 GALLONS**



# Torque Converter Operation

Continued from Page 274

## Correct Application

SUCCESSFUL performance in any particular vehicular installation is dependent on the careful matching of engine to converter, and converter to rear axle ratio.

Not just any engine will operate successfully with a torque converter. Certain basic characteristics must be

designed into any power plant destined for use with a converter. The engine should deliver a consistent high torque throughout a broad range of speeds. It should be able to deliver high torque at low rpm's, and should be able to maintain this high torque output throughout the entire range of operating speeds in turbine and direct drive.

## THE *Whitney Safety SIGNAL* COULD PREVENT THIS



- THE WHITNEY BRAKE FLUID SIGNAL
- WARNS THE DRIVER WHEN FLUID IS LOW
- WHEN A BRAKE LINE BREAKS
- EASILY INSTALLED ● FITS ALL CARS & TRUCKS

The WHITNEY BRAKE SIGNAL provides the ONLY means ever offered the driver of knowing when brake fluid is low or when a brake line breaks while the car or truck is in motion. This patented signal is as simple as it is economical—a switch in the master fluid reservoir lights a red button on the instrument panel when the danger point approaches—when the brake fluid needs attention.

The WHITNEY BRAKE SIGNAL has been thoroughly tested on leading truck fleets and hundreds of passenger cars. Time after time, serious and costly accidents have been prevented because the Whitney Signal gave warning in time.

For full details write, wire, or phone

**BALDWIN ELECTRIC COMPANY**  
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TEL.: ADams 3286

It has been pointed out that when accelerating in turbine drive, engine speeds jumps quickly from idle to around 1200 rpm, and then increase gradually to around 1800 rpm. Therefore, a properly matched engine should develop a torque curve whose peak is almost flat through this range. It is a well-known fact that certain power losses occur within the torque converter in turbine drive and that maximum operating economy is attained only by keeping the period of running time in turbine at a minimum.

Ability to accelerate rapidly is another "must" in the ideal engine. In addition, the engine must be capable of high-speed operation to permit a flexibility in the selection of the rear axle ratio best suited to the particular application.

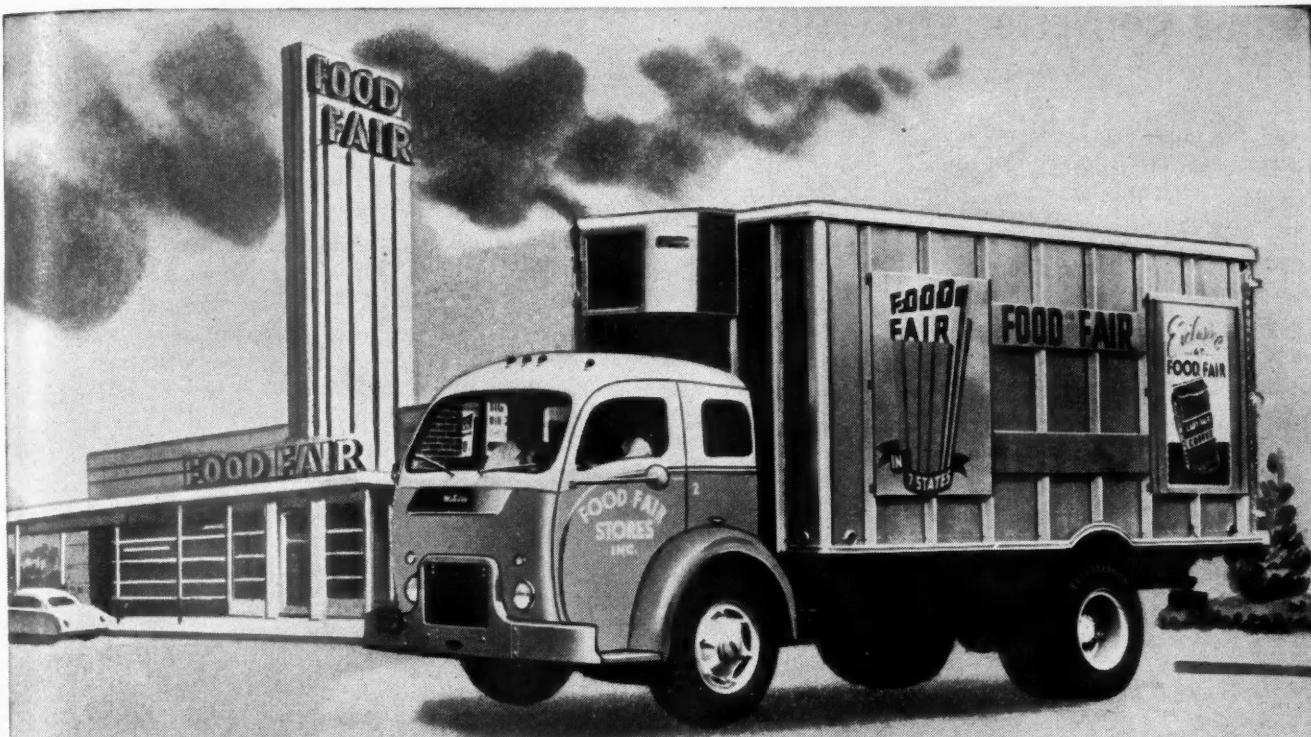
Recent surveys made by Twin Coach Co. have shown that, in large city operation and normal city traffic, motor coaches operated at speeds under 25 mph 75 per cent to 80 per cent of the time, and that they operated at 35 mph only 5 per cent of the time. Operators should make careful checks of average operating speeds, average load factors, and grade conditions when determining the rear axle ratio to be used in connection with a torque converter.

By using a "slow" ratio, say 7 2/5:1, rapid acceleration with a minimum period of operation in turbine drive is attained, for the converter shifts to direct drive at approximately 14-16 mph with this ratio. Of course, top speed is lowered, but this is where the high-speed engine has the advantage. By the use of an engine which can be operated at 2600 rpm, and up to 2800 rpm when required, a top road speed high

(TURN TO PAGE 278, PLEASE)



"D'ya fix flats?"



## No Other Truck So New! So Useful... So Economical!

**FOOD FAIR STORES** speed the flow of perishable foodstuffs from warehouse to customer by White Truck . . . depending on their fleet of carefully selected Whites to handle this complex food transportation job.

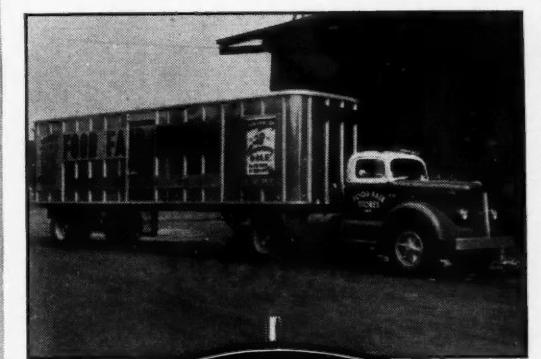
Narrow streets and heavy traffic in congested areas provide a real test for the *entirely new* White 3000 . . . and results have been amazing. These new Whites get in and out of congested places in far less time . . . with greater ease . . . and with new safety. They save time and reduce costs in every phase of delivery service. See your White Representative for facts about the economy and efficiency of this great new White.

**THE WHITE MOTOR COMPANY**

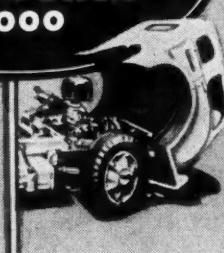
Cleveland 1, Ohio, U. S. A.

THE WHITE MOTOR COMPANY OF CANADA LIMITED  
Factory at Montreal

**FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS**



**White**  
SUPER POWER  
3000



# Torque Converter Operation

Continued from Page 276

enough to meet the needs of large city operation is easily reached. For example, with the 7 2/5:1 axle, speeds of 40-43 mph are possible.

Research experiments with racing vehicles and racing craft are continuously being carried on by Twin Coach Co. and Fageol Products Co., builders of the Fageol Twin Coach Engine, to further perfect the light-

weight, high-speed high compression engine.

## Maintenance Training

IN THE case of almost all motor coach drivers and mechanics, the torque converter is something new and strange. If they are to use this new tool to its best, most economical advantage, adequate training must be given.

**It's not the  
container size  
that counts...**

*it's the  
filtering surface!*

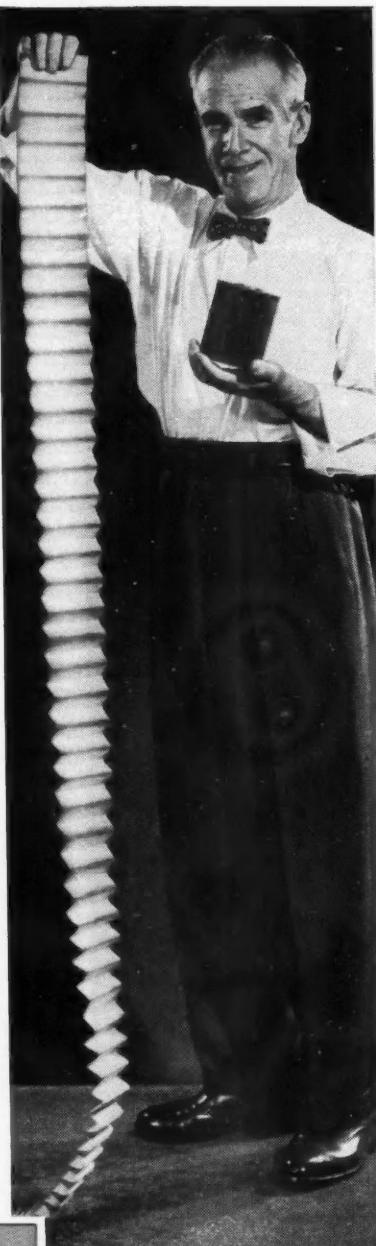
**That's why the accordion  
element in Purolator's  
Micronic\* Oil Filter removes  
290% more abrasives...**

**Just look**—this smallest automotive-type Purolator Micronic\* element . . . although no larger in container size . . . has 570 square inches of effective filtering surface as compared to 54 square inches in ordinary filters!

Purolator engineers perfected this element so that it filters particles measured in microns (.000039 of an inch) . . . removes an average of 290% more abrasives as proved by competitive test results.

This means you get faster, more complete filtering of all the sludge and abrasives . . . resulting in fewer engine repairs and less down-time. And that's why it will pay you to let your near-by Purolator supplier equip your entire fleet with genuine Purolator Micronic\* Refills now. Remember—there's a Purolator Refill for practically every make of vehicle and oil filter.

\*Reg. U. S. Pat. Off.



Purolator Products Inc.  
Rahway, New Jersey; and  
Toronto, Ontario, Canada

Training the driver is a simple task for he has little to do besides steer, accelerate, and brake the coach. He is free to handle fares and is on a par with traffic in matters of acceleration and speed. However, if the converter is to serve him properly, he must do certain things.

He should be trained to build sufficient air pressure in coach main tanks on a morning start before attempting to shift the transmission into "forward" or "reserve." He should be trained not to remove his foot from the throttle while the converter is shifting automatically, for in so doing he upsets the pre-set balance of engine-to-driveshaft speed and a rough shift results. He should receive instruction in the proper method of shifting from "neutral" to "forward" and "reverse" and should be given some basic instruction in the functioning of the converter, as it pertains to actual operation, so that he can make intelligent reports to the mechanic in the event of difficulty.

The coach service man should be schooled in the importance of cleanliness in the handling of torque converter fluids. The use of a portable closed container mounted on a dolly at a height sufficient to permit gravity feed through a hose will solve the dirty container problem and promote the cleanliness which is essential to long converter life.

The mechanic in the grease pit responsible for the periodic lubrication of this unit should be instructed briefly in the functioning of the converter, so that he will understand why he must not overlook the lubrication of turbine pump and clutch throwout bearings. He should know that high

(TURN TO PAGE 280, PLEASE)

## Named Driver of Year

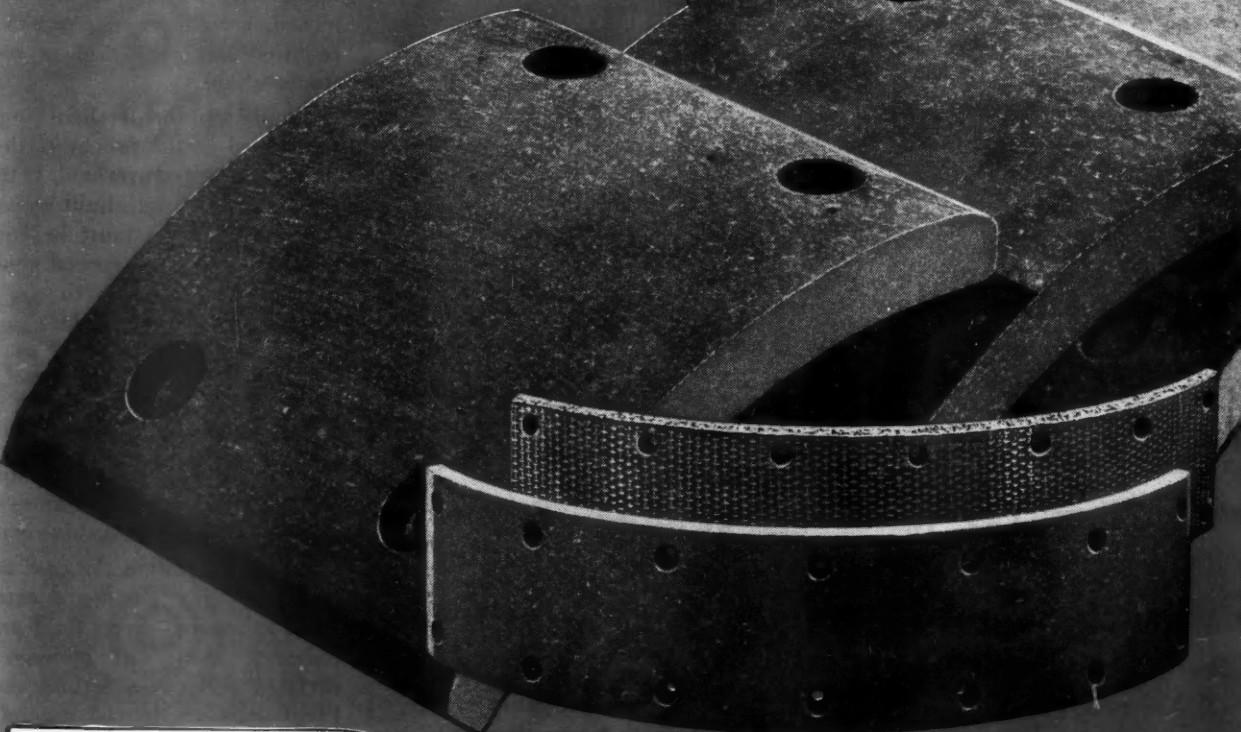
Lloyd Reisner, 37-year-old driver for the Hancock Truck Lines, Inc., Indianapolis, Ind., has been named Driver of the Year for the nation's trucking industry. The selection was based on his long record of accident-free driving, plus a dramatic highway rescue during which he gave life-saving assistance to a mother and her nine-year-old daughter, injured in an automobile accident.

The American Trucking Associations, Inc., sponsor of the national contest, announced today that it will provide an expense-paid trip for both Mr. and Mrs. Reisner to Washington and New York. He also will receive a Crosley refrigerator and a large trophy from the Trailmobile Co., Cincinnati, Ohio, and other awards.

# PROVING GROUND TESTED

*for safety*

You can count on Raybestos for an extra margin of safety. Our brake linings, brake blocks, and clutch facings have all been exhaustively proving ground tested. They are built to take punishment, give performance.



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# Torque Converter Operation

Continued from Page 273

transmission oil level may indicate turbine case seal leakage and that an immediate report of this condition should be made.

Fluid filters should be serviced on the grease pit so that the fluid may be drained and refilled in the event that excess sludge is found in the filters. Torque converter fluid contains certain additives and inhibitors to pre-

vent oxidation, foaming and sludging. These chemicals are gradually exhausted at a rate entirely dependent on the severity of the service in which the coach is operating. No set mileage for fluid change has been established. Filters should be watched and when excess sludge appears, indicating the exhaustion of fluid additives, the system should be drained and refilled.



## NEW MARION HYDROGATE

### Hydraulic Lift

The new Marion HYDROGATE is built to give more years of trouble-free service. All lifting and loading is hydraulically controlled, making loading of merchandise faster and easier . . . one man can handle loads ordinarily requiring two or three men. The Hydrogate is a powerful elevator, and serves as a safe, locking tailgate. It's fully adjustable — has non-skid platform.

- Rated Capacity 2000 lbs.
- Power closing
- Holds at any height
- Available in any size
- Fits any truck
- Easy to install

**MARION**  
BODIES AND HOISTS

MARION METAL PRODUCTS CO., MARION, OHIO

The training of the mechanic in the operating garage is especially important. If he is familiar with the construction and functioning of the torque converter, the wiring circuits involved, and with the operation, and adjustment of the accessory controls, his job will be an easy one.

The basic principles of operation of the torque converter are simple and any mechanic equipped with a test light, a jumper wire, and a simplified trouble-shooting procedure will be able to locate and remedy minor troubles which may occur from time to time.

If he is taught how to make the adjustments that may be required, and most important, if he understands the effect these adjustments have on the operation of the unit as a whole, servicing time will be held to a minimum. Once these adjustments have been made and properly locked, very little change should be required until the unit is removed for overhaul.

The man in the overhaul shop must be trained in the proper methods of torque converter overhaul, if trouble-free operation of rebuilt units is to be achieved. He must be equipped with the necessary special tools and must be taught how to use them. He must have a clean place in which to work.

In too many shops we find unit overhaul being done within a few feet of brake drum grinders, steam cleaners or other sources of dirt and abrasives. Absolute cleanliness should be the watchword in turbine overhaul.

Clearances within the case and between rotating parts are extremely small to insure correct fluid pressure balances. Any dirt between these surfaces will cause serious damage. Fluid seals are lapped carefully before final assembly. Any abrasive or grit on seal faces will shorten their leak-free life appreciably. Unless the overhaul mechanic knows what to do, how to do it, and especially why he must take certain precautions, top performance of the overhauled unit will not be obtained.

END

### MECHANICS ARE HUMAN

"If a man works in a clean place, he eventually will become clean. When he becomes clean, he will get better at his job." —B. M. LARRICK.



**"SPREAD 72 TONS  
OVER 110 FEET—  
THAT'S SOME LOAD!"**

says Wayne Slocum, General Manager,  
Percy Jones, Inc., Oklahoma City, Okla.

**"But these U. S. Royals carry that much, and more, every day.** Loads like this are just routine for our heavy duty trucks. We haul oilfield equipment over all types of highways, mostly on U. S. Royal Raymasters. We can count on these tires for superior performance—and as much as 20% longer mileage."

Raymasters are ideal for your high-speed, heavy-duty highway operations—extra-deep tread for longer mileage . . . special tread design for cool running . . . deeper anti-skid for safer, quicker stops . . . all this plus the cost-cutting, preventive tire maintenance plan of the "U. S." Fleet Service. Call your U. S. Royal Distributor today.



**U.S.  
ROYAL  
TIRES**

# U.S. ROYALS

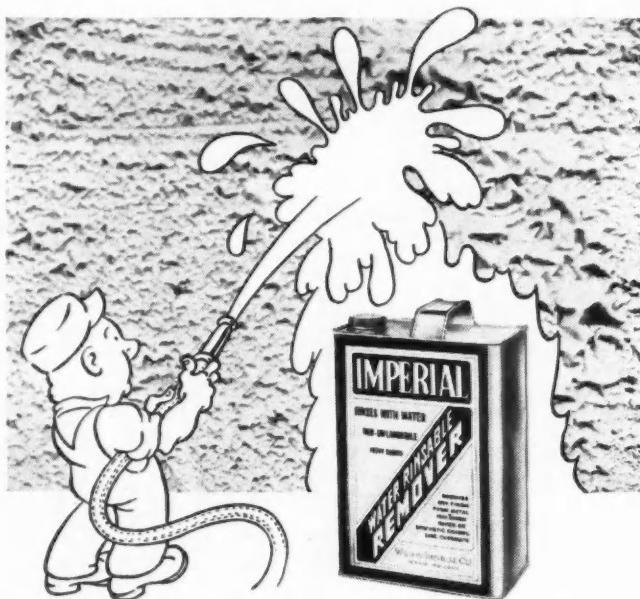
PRODUCT OF UNITED STATES RUBBER COMPANY

# A Trucker Looks at THE HOOVER REPORT

There are four distinct plans before the nation, particularly its legislative and administrative bodies, concerning transportation. The Brookings Institute's recommendations (See Transport Department Proposed, CCJ, Page 42, Dec., 1949), Secretary Sawyer's Report, at the request of President Truman, (See CCJ, Page 71, Jan., 1950), U. S. Senate Committee on In-

terstate and Foreign Commerce's Sub-Committee on Domestic Land and Water Transportation Report, (See CCJ, Page 67, Jan. 1950), and the broad Hoover Commission recommendations, which contained an overall plan for increased efficiency in the functioning of the various government agencies. Mr. Bryant comments on the latter recommendations.—THE EDITORS.

For removing  
**TOUGH**  
**FINISHES**  
the easy  
non-inflammable  
way



## **NEW WATER RINSABLE PAINT REMOVER**

**A great time and labor saver!**

This new, powerful remover is especially designed for removing tough finishes from metal surfaces. Effective not only on lacquer, enamel, synthetics, etc., but also on baked enamel and tough primers, including Zinc Chromate.

Imperial Water Rinsable Remover is heavy bodied—will not run on upright surfaces. Easily applied with a paint brush.

Penetrates the toughest finish, causing it to form a soft mass that can be flushed off with water, using a hose. Or you can use a stiff bristle brush, steel wool dipped in water, or a putty knife.

No wash-up is needed after finish has been removed.

Safe on all commonly used metals.

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your particular  
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Kindly send me literature on Imperial Water Rinsable Remover.

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Company name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

**By Daniel P. Bryant**

Vice President & General Manager  
Bekins Van & Storage Co.,  
Los Angeles, Calif.

THE HOOVER COMMISSION report is a significant contribution to the nation and to transportation. What will be the fate of the Hoover Report? Will it be forgotten? If every organization promotes the Report energetically, this will not happen.

One phase of the Report deals with recommendation of the Commission affecting all independent regulatory agencies; the other phase deals with recommendations affecting those agencies with which the trucking industry is primarily concerned.

The first phase recommends, to federal regulatory agencies, sound principles of business organization and administration, to eliminate red tape and inefficiency, and create proper lines of authority. For example, the Report finds that administrative duties of the various Commissions are divided among the member Commissioners; the result is lack of proper coordination and the bogging down of work. It is recommended that each bureau chairman, alone, have full responsibility for administration, freeing other members to handle the regulatory work. The Report also finds that appointees are often below par and recommends increases in salaries for Commissioners and staff members so that qualified personnel will be attracted to these positions. It is a fundamental of business that the right person in the right job means that the job will be done well.

The Hoover Report should be required reading for every business executive; it teaches the fundamentals of how to organize and administer.

### Trucking Industry Affected

THE SECOND PHASE of the Report deals with those recommendations particularly affecting the trucking industry.

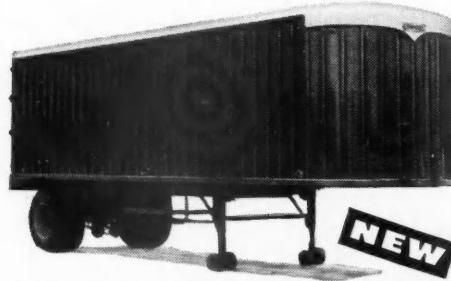
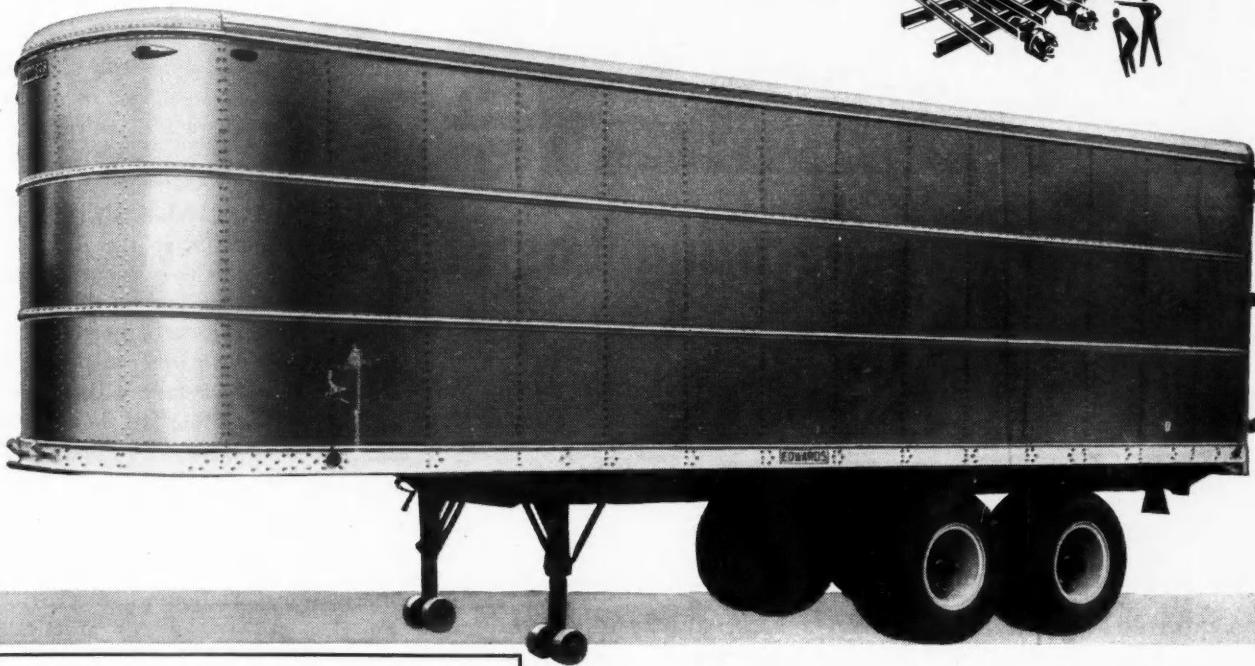
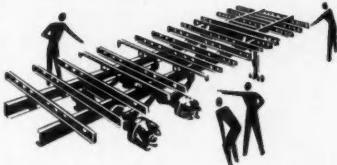
(TURN TO PAGE 284, PLEASE)

HOW THE **DOUBLE-STRENGTH** FRAMES OF

# EDWARDS

**ALUMINUM TRAILERS**

ADD TO YOUR PAYLOAD PROFITS



**EDWARDS CORRUGATED TRAILER . . .**

has several new features that add to paying performance. Sturdy corrugated sides welded to top and bottom side rails . . . frame and side rails of hi-tensile, light weight steel . . . new, improved type landing gear . . . advanced free-end type springing. You'll get more mileage for less maintenance cost with an Edwards. Write for full information.

You wouldn't put a boy at the heavy work of a man, because he would lack the strength to handle it. That's why the new Edwards Aluminum Trailers have double-strength frames. They will handle man-sized jobs for you on the highways . . . and put a plus in your profits.

The frame is the backbone of a trailer. So Edwards takes an aluminum body with the same type frame that would be used on a frameless chassis. Then Edwards mounts the body on a chassis with a frame. This combination of aluminum body and a chassis of hi-tensile pressed steel, that is  $2\frac{1}{2}$  times as strong as ordinary steel and has amazingly little weight and bulk, also gives you greater payload capacity in place of deadweight.

Take a look at Edwards before you buy any trailer.

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DIVISION EDWARDS IRON WORKS, INC.

EDWARDS TRAILER AND BODY CO.

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Rush data on ( ) Edwards Aluminum Trailers  
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DEALERS: A LIMITED NUMBER OF EDWARDS FRANCHISES ARE AVAILABLE IN RESTRICTED TERRITORIES



## Will Cut Your Operating Costs!

Whether you use gasoline or Diesel engines, the one accessory that will cut your operating expense 40%, 50%, or more is a *good* oil filter.

MICHIANA Oil Filters, the *engine engineers'* filters, have been thoroughly tested and proven in every kind of service, and on every kind of motor driven vehicle for a quarter century. MICHIANA are constantly improved to meet engine developments.

MICHIANA's scientifically treated long-fiber cotton element absorbs the grit, abrasives and sludge in motor oils. Frequent and costly oil changes are eliminated,

thorough lubrication is assured, unnecessary engine wear is prevented, and repair bills cut. Fuel and oil bills are slashed because MICHIANA Filters keep engines in top, efficient operating condition for thousands and thousands of extra miles of service.



*A complete range of sizes and types is available to meet your particular service.*

**MICHIANA PRODUCTS CORPORATION**

Michigan City, Indiana

**MICHIANA  
OIL FILTERS**

### Hoover Report

Continued from Page 282

ing industry. Two recommendations are particularly important:

1. A transfer to the Department of Commerce from other regulatory agencies of all non-regulatory transportation activities. A section of the Department of Commerce would study the transportation needs of our country and take certain actions in promotion thereof.

2. The Report recommends that ICC functions dealing with safety of operations be transferred to the Department of Commerce.

Brookings Institute

#### THE BROOKINGS INSTITUTE

recommended that the ICC, the U. S. Maritime Commission and the CAB be abolished and all their functions transferred to a newly established *Department of Transportation*, headed by a Secretary with Cabinet status. The Institute felt there would be more effective coordination of planning and regulation.

The Hoover Commission, however, felt that no one particular industry should be given such status, particularly transportation which provides an element of cost for practically every industry. Furthermore, the functions of various existing transportation commissions or bodies were considered vastly different from each other and separate treatment as to regulation was preferable.

*What is the reaction of the trucking industry to these matters?* The American Trucking Associations, Inc., has officially gone on record against the abolition of the ICC and the establishment of a Department of Transportation. I am sure that all members of the trucking industry support this position. Our industry fears the intrusion of politics into business. The creation of a Department of Transportation with a Secretary having a Cabinet status would make this intrusion possible.

The Hoover Report states that the transportation service to be carried out by the Department of Commerce should study (and the following is quoted) "the most advantageous route patterns for extension of transportation services. Provision of new services in any given case should be

(TURN TO PAGE 286, PLEASE)

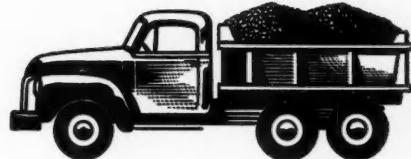
**On Any Truck**



**When You Carry Overloads—You need**



**Greater Power Brake Capacity!**



**(You Can Be Sure with)**

**Bendix**  
**HYDROVAC**

WORLD'S MOST WIDELY USED POWER BRAKE

BECAUSE IT'S **"Load Rated!"**

**Bendix**  
PRODUCTS DIVISION  
**SOUTH BEND**  
INDIANA

No matter what type of trucks you operate, it's just common sense to install the right power brake for the job. That's why you owe it to yourself to talk to your Bendix Vacuum Power dealer. He can give you sound reasons why Bendix\* Hydrovac offers greater economy and flexibility on any job—his statements are based on fact, too, because Hydrovac is the world's most widely used power brake. Make it a point to see your Bendix Vacuum Power dealer soon; because we believe that when you get the facts you'll be solidly sold on Bendix "Load-Rated" Power Brakes.

  
AVIATION CORPORATION  
\*REG. U. S. PAT. OFF.

Export Sales: Bendix International Division, 72 Fifth Avenue, N. Y. 11, N. Y.

# PROOF

that GUN IRON\* BRAKE DRUMS



*CUT  
COSTS*

**3 WAYS**

\* New high-carbon alloy of Gun Iron developed expressly to minimize heat-checking and squeal—give longer wear-life.

### Proven Features

- LONGER WEAR
- MINIMIZED HEAT-CHECKING
- MINIMIZED SQUEAL
- LOWER COST-PER-MILE

### TRUCKER REPORTS:

Savings of \$136.62 on brake drum costs per truck for every thousand road-miles; here's how it figures out. This trucker is making daily runs through the mountains with real tonnage. The excessive drag on his brakes frequently cracked through ordinary cast iron brake drums in one day! Hunt-Spiller drums, of the new Gun Iron alloy, last over eight months on the same run. And the above savings do not include savings in service costs or profits lost while the trucks are in the garage.

### BUS COMPANY REPORTS:

Ordinary brake drums were lasting an average of 30,000 miles before they had to be replaced. After installing Hunt-Spiller Brake Drums the bus company reports that the original set has gone 97,000 miles currently and is nowhere near the replacement point.

Gun Iron Brake Drums have been noted for long-wearing ever since they were pioneered by Hunt-Spiller over twenty years ago. The above reports are based on the new high carbon Gun Iron alloy perfected in our laboratories expressly for brake drum applications. Our representatives will gladly discuss their features with you upon request. Built to original equipment specifications for most busses and trucks; fully guaranteed.

SEND FOR NEW BULLETIN

**HUNT • SPILLER**  
MANUFACTURING CORPORATION  
AUTOMOTIVE DIVISION

399 DORCHESTER AVENUE • SOUTH BOSTON 27, MASS.



## Hoover Report

Continued from Page 284

weighed against all types of transportation service already provided, as, for example, a proposed new air route should be weighed not only against other air routes but against all types of transportation."

How will this affect particular carriers whose applications for routes are before the ICC or the CAB? This is not made clear in the Hoover Report. We all want more efficient and less costly bureaucracy, not more bureaucracy. We are, therefore, concerned over an enlargement of the functions of the Department of Commerce.

### Safety Functions

AS TO THE TRANSFER of safety functions from the ICC to the Department of Commerce, I believe there will be considerable disagreement. The ICC itself may not be favorable to this proposal, feeling the work it is doing in the field of safety of operations is not logically severable from its other work.

Many truckers feel that the ICC is doing a good job and are reluctant to trade something that for years has been satisfactory for something which could cause us grief.

The heads and chief officials of practically every bureau and agency affected have protested the changes affecting their own particular functions, though otherwise praising the Report. The pressure of these various persons and groups is tremendous. As much as three billion dollars may be saved through the elimination of inefficiency. A lot of money and a lot of people are involved. It would be contrary to human nature for government men, regardless of their sincerity, to do other than protest.

END

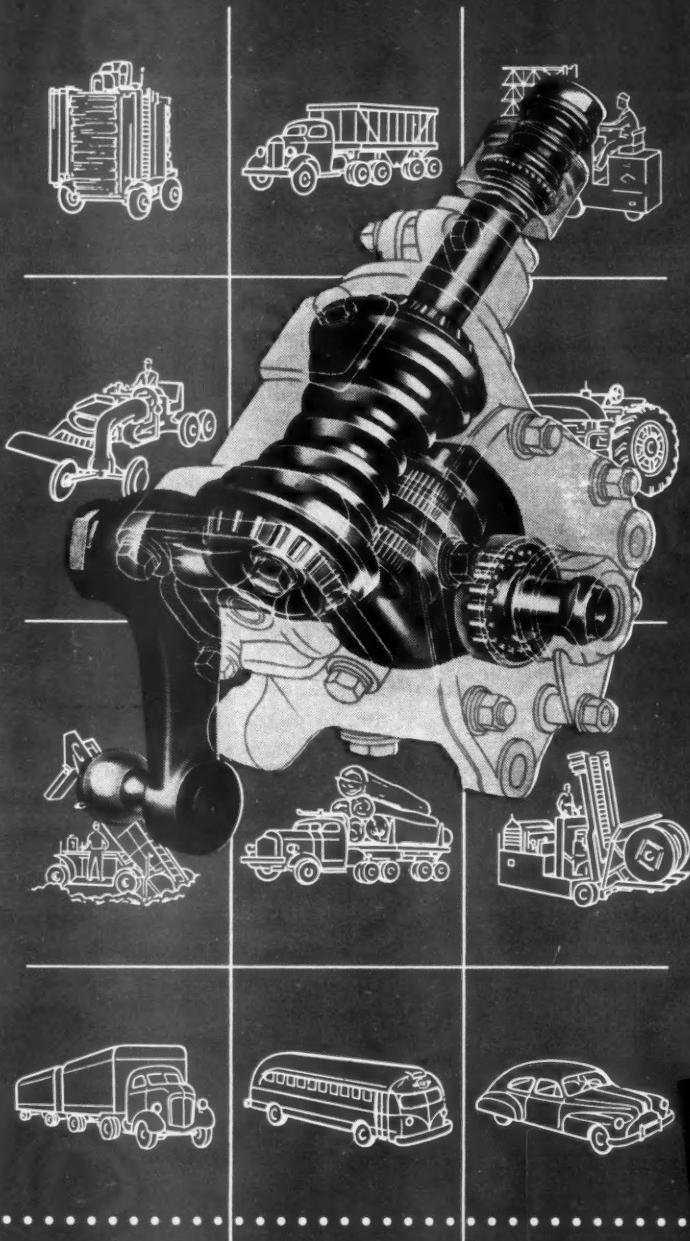
### IHC Appoints Two New Dealers In Pennsylvania

The firm H. G. Bender has been appointed International truck dealer at Meyersdale, Pa. H. G. Bender, who heads the firm, is sales manager, Charles Uphold is service manager, and M. W. Lindeman is parts manager.

It also was announced that Proctor Bros. has been appointed International truck dealer at Irwin, Pa. Partner John S. Proctor is sales manager, and Partner Owen G. Proctor is service and parts manager.

**Having Hardly Any Maintenance Of Its Own  
It Reduces Over-all Maintenance Of The Vehicle**

# Gemmer Easy Steering



Maintenance of a Gemmer Steering Gear is almost nonexistent. Lubrication and simple adjustment at long intervals . . . that's all.

Gemmer steered vehicles are easily maneuverable, substantially reducing driver fatigue, keeping the driver fresh. Alert and untired at the easily responsive wheel, he gets through heavy traffic—in and out of parking places, docks and narrow entries with much less vehicle damage. Thus, Gemmer Steering contributes to a material reduction in costly maintenance.

A fresh driver means more mileage per vehicle per day . . . additional economy.

Gemmer Easy Steering is always responsive, firm, with no rubbery feeling or wander. Hour-glass worm and rolling gear tooth sector almost eliminate friction. Strength is abundant and there is plenty of power for parking.

With reasonable care, a Gemmer Steering Gear will last the life of the vehicle.

**GEMMER MANUFACTURING CO.**

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DETROIT 11, MICHIGAN

Gemmer Has Been Making  
Steering Gears for Motor Vehicles  
for 43 Years

# Controlling Wear in PISTON RINGS\*

by A. M. Brenneke

Chief Engineer  
Perfect Circle Co.

THERE ARE THREE generally recognized major causes of cylinder wear. These are: abrasion, corrosion, and scuffing.

Abrasive wear of cylinders is largely caused by air-borne dirt. The en-

gine air supply must be kept clean if low wear rates of cylinders and rings are to prevail. Abnormal wear rates may be expected if dirt is admitted in excess of .00025 grams per cubic foot of air. This applies to air after it

leaves the filter and as it enters the engine. Dirt in the lubricating oil may also accelerate cylinder wear, but the effect on crankshaft and bearings is so much greater that we need not consider it at great length here.

Corrosion is probably the second most important contributor to cylinder wear. The most predominant cause of corrosive wear is low coolant temperatures due to design, or more often, operating conditions. Generally, abnormal wear becomes apparent at 120 deg. F., or less. Jacket temperatures should be maintained at 160 deg. F. or higher for lowest cylinder wear. To determine the effect of coolant temperature on cylinder wear rate two engines which were subjected to 1000 hr. cyclic dynamometer tests which simulated city bus operation. The two engines were equipped with different cylinder liner materials and each engine contained three widely different compression ring combinations. The tests were run at over 160 deg. F. water out temperature except during the 300 to 400 hr. period when it was reduced to 120 deg. F. Wear rate increased in all but three cylinders during the period of low jacket temperature and the rate change was similar in spite of great variation in level before and after the low temperature period. Exceptions to the rule were probably due to slight errors in measurement or differences between individual cylinders in cooling characteristics. The increase in wear rate with low coolant temperature was evident, but less pronounced on the rings. Ring wear is usually less adversely affected by low jacket temperature than cylinders. High sulphur diesel fuels are rapidly overtaking low coolant temperatures as a cause of cylinder and piston ring corrosive wear.

The question of what can be done through piston ring design and application must necessarily be treated in considerable detail. First, let us consider what can be done to improve resistance to abrasive wear.

(TURN TO PAGE 290, PLEASE)

\*—Excerpted from a paper presented at the SAE Annual Meeting, Detroit.

## EASIER, QUICKER WAY TO REBUILD CARBURETORS

Hailed by Fleet Operators & Mechanics

### HYGRADE Fingertip System

(covers practically all carburetor makes)

Makes a carburetor expert out of any competent mechanic in 1 week's time.

Lops as much as 25% off the time sheet for shops that are already rebuilding carburetors.

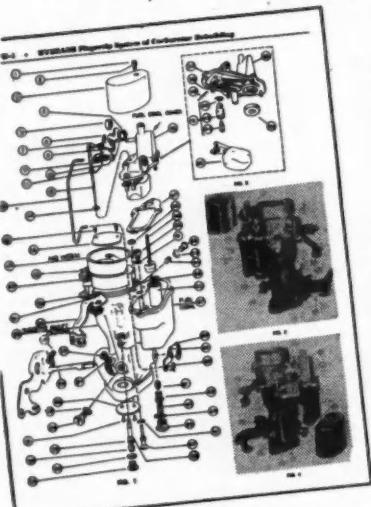
You'll have real insurance against "down-time" because you know that every part that wears has been replaced with a *brand new part* from the Hygrade kit. Without leaving the shop—in a matter of hours—every mechanic can learn to dis-assemble and rebuild a carburetor. All the mumbo-jumbo that mechanics used to associate with carburetor rebuilding is gone. Packed in every kit are clear step-by-step instructions, arranged in sequence of assembly which tie in with large exploded-view drawings and photos. The location of parts on these pictures is so easy that parts practically fall into place by themselves.

#### THE HYGRADE FINGERTIP KIT

ALL THE PARTS the mechanic needs for rebuilding a carburetor are literally at his fingertips...packed and labeled in separate envelopes for each assembly operation. Work is done step-by-step, envelope by envelope. (As each assembly operation is completed all the parts in that envelope are used up.)

For real insurance against "down-time", write us—giving the make and model of one of the carburetors you use. We will send a sample instruction sheet. Convince yourself by actual test, how easy carburetor rebuilding can be.

SAVE GAS • SAVE ON DOWN-TIME



#### OPERATE YOUR OWN CARBURETOR REBUILDING DEPT.

with the Hygrade Fingertip System. You save time; you save money; you know the carburetor has been completely rebuilt with brand new parts.

Write today, on your company letterhead, for FREE sample instruction page from the Hygrade Manual.

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STANDARD MOTOR PRODUCTS

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# New, Exclusive **Firestone** RUBBER RESINOUS-PLASTIC GUM-DIPPING PROCESS... Increases your Tire Mileage... Cuts your Tire Costs

**FIRESTONE** pioneered and patented the Gum-Dipping process in 1921. It was an outstanding development and thousands of truck owners have benefited by it because it greatly increased tire mileage and reduced their tire-cost per mile.

Now Firestone leads again with a revolutionary new Rubber Resinous-Plastic Gum-Dipping process that adds thousands of extra miles to tire life. The basic advantage in this process is the fact that the resinous plastic material has a natural affinity for rayon and becomes an inseparable part of the rayon cord. As it flows around the cord filaments it carries pure rubber with it. The rubber greatly increases adhesion and contributes to longer flex life. Longer flex life means longer tire life.

To truck owners the advantages of the new Firestone Resinous-Plastic Gum-Dipping process add up to more original miles — more retread miles — and of course, lower cost miles — the net of which is dollars saved.

*Listen to the Voice of Firestone every Monday evening over NBC*

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When Buying New Tires or New Equipment  
**Specify FIRESTONE TRUCK TIRES**



## Piston Rings

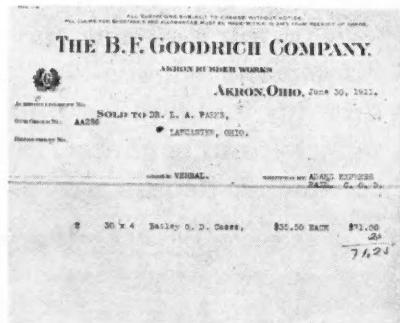
Continued from Page 288

Top compression rings are the most important consideration in this respect. Anything we do to reduce their wear rate also reduces cylinder wear. Width of top rings should be as great as the output, scuffing tendencies, and space limitations of the engine design will permit.

Selection of material for top rings is important. We have for the past ten years used a heat treated chrome-moly alloy cast iron material for compression rings for all diesel applications. During the past five years chrome-plated top compression rings have been widely adopted in diesels. Such rings are plated with .004-.007 of solid; that is, not porous, chrome plate. We have made and used both types but prefer the solid type for maximum scuff resistance and minimum wear rate. A few applications demanding extremely long life are using .008 minimum plate thickness. Tool marks in the finished plate. Result in the greatest scuff resistance we can provide in a chrome-plated ring but inflicts a slight penalty on initial oil economy. A smooth finish is used in cases where this penalty can not be tolerated. In both cases the rings are finished after plating by a lapping operation. The lapped finish has good scuff resistance and is necessary to provide adequate initial face accuracy. Face inaccuracies

(TURN TO PAGE 292, PLEASE)

## Higher Tire Prices?



Tire prices 39 years ago as compared to those at present are illustrated in this copy of a 1911 invoice for the purchase of two tires in 1911, recently sent to The B. F. Goodrich Co. The casings were those used on one of the popular cars of the day. The current retail price of a 6.00-16 casing, most popular size, is \$15.80, plus \$1.12 Federal tax



"Follow the Leader"

# One basic design



RIGHT!

RIGHT!



RIGHT!

RIGHT!



RIGHT!

RIGHT!



HENDRICKSON  
TANDEM

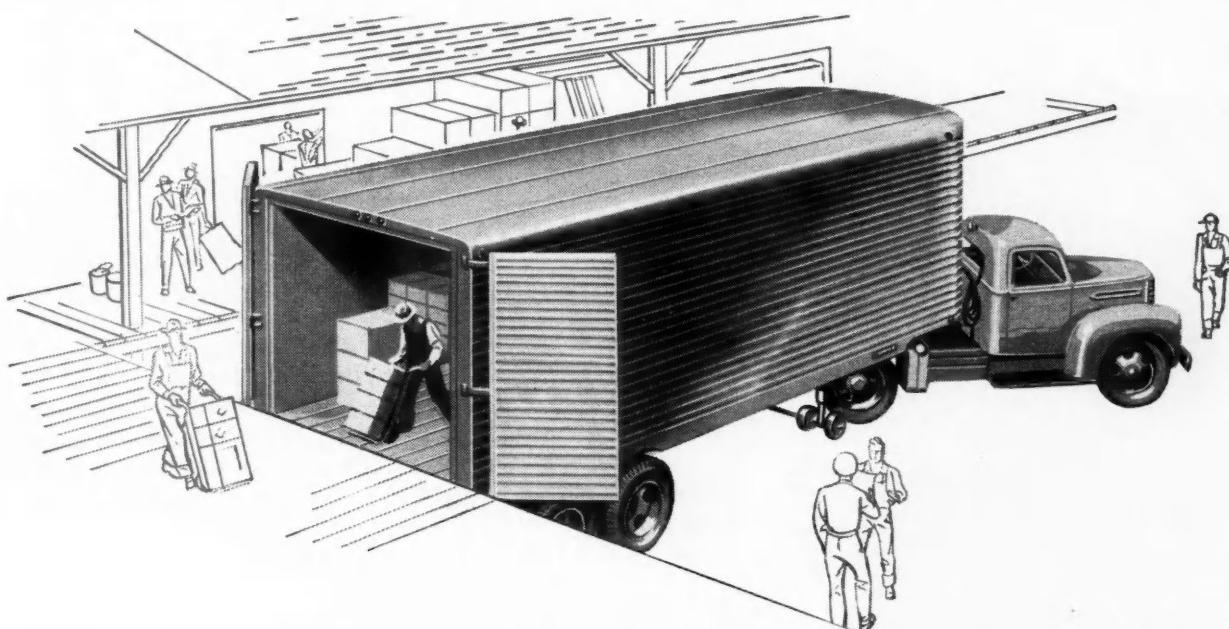
Right!

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TURN MORE DEAD WEIGHT ■ INTO PAYING FREIGHT WITH—

# MAGNESIUM



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### **44% Lighter! 83% Stronger!**

An extra 724 lb. of revenue producing freight added to the capacity of a 35-foot van trailer! That's what happened when a leading trailer manufacturer switched from  $1\frac{1}{8}$ " composite flooring to extruded magnesium "boards". And along with this extra capacity came additional strength. The new flooring can carry an 83% greater concentrated load.

The increased pay load made possible by magnesium means extra profit to most operators. This lightweight, strong material cuts useless dead weight to a minimum, for it is by far the world's lightest structural metal.

Truck bodies, too, can be more profitable when made of magnesium. Significant reductions in dead weight pay off in increased capacity and reduced maintenance. Extensive cost records have proved it pays operators to buy magnesium lightness. Investigate magnesium. See for yourself how it can cut operating costs, increase profits.

For more information about the use of magnesium in highway transportation, call the nearest Dow sales office or write direct.

**Magnesium Division, Dept. MG-85**

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*The Lightest Truck Bodies Are Made of Magnesium*

COMMERCIAL CAR JOURNAL, April, 1950

# Controlling Wear in Piston Rings

Continued from Page 290

must not exceed .0001 when solid chrome is used since the extremely low wear rate leaves the ring with little ability to "run in" or wear out these inaccuracies.

Locating the top ring on the piston is an important consideration as regards scuffing tendencies. When the piston is at the top of the stroke, the

top ring should not travel beyond the end of the water jacket in order that the top ring will not have to operate in excessively hot areas of the cylinder. Locating the top ring well down on the piston is advantageous too. A wide top land protects the ring from direct effects of combustion and reduces its operating temperature.

The top ring must also be well supported by a strong second land if it is to do a good sealing job and enjoy a low wear rate. For a rule of thumb .20 per inch of cylinder diameter for top lands and .05 per inch for second lands will provide adequate land widths. Distribution of space on any piston is always a compromise which must be made for each individual engine. During recent years the trend to fewer compression rings in diesels has somewhat simplified the matter. Many diesels are performing excellently with three compression rings and several have been very satisfactorily sealed experimentally, with only two compression rings. Another space saving device on which several engine builders are doing considerable work currently consists of using two oil rings in a common groove. Experimental results have been excellent, although not enough test time has been accumulated by any of those working on the arrangement to make any predictions as to durability.

It appears that low minimum wear of pistons and cylinders is a matter to taking the utmost advantage of many small details of materials and design.

END

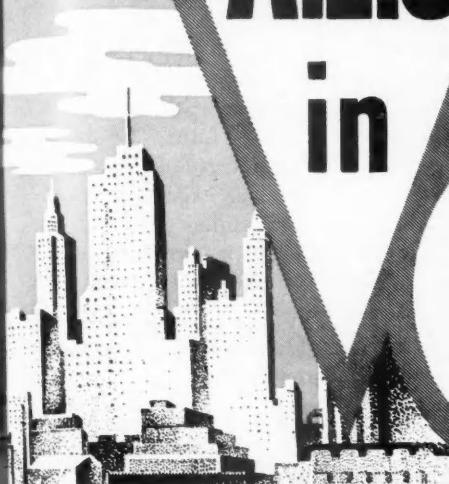
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**Stands the**  
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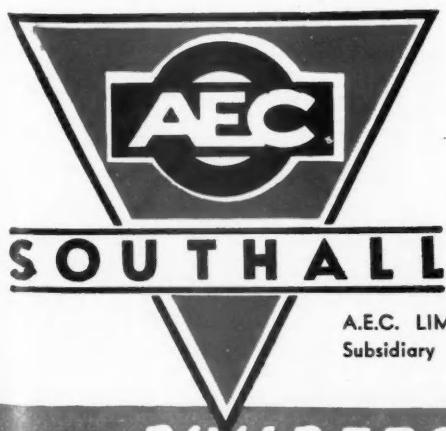
The exhibition to be started this month in New York by the British automobile industry will show a full range of A.E.C. diesels . . . the most famous in the world. They power buses and heavy-duty trucks all over the globe! They are the driving force of a large number of seagoing craft! They are widely used in factories to provide reliable, inexpensive power! And those wartime marvels, the historic "Mulberry" ports, owed their main power, light and heat to A.E.C. Diesel-Electric sets! A.E.C. diesels are a power in most lands . . . see them at the Exhibition!

*See the range of A.E.C. Diesels on*

## STAND 3

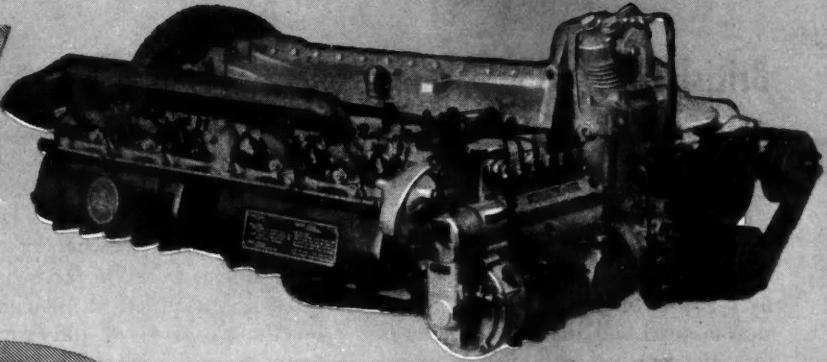
*British Automobile and Motor Cycle Exhibition  
Grand Central Palace*

*Lexington Avenue      New York City  
APRIL 15-23, 1950*

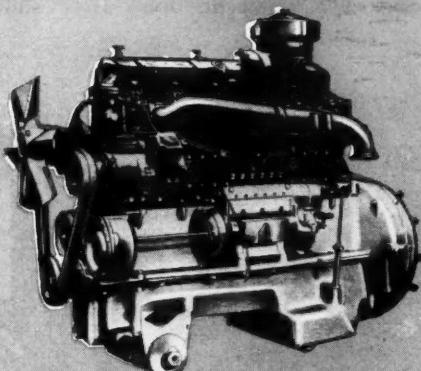


A.E.C. LIMITED, SOUTHALL, MIDDLESEX, ENGLAND  
Subsidiary of Associated Commercial Vehicles, Ltd.  
LONDON

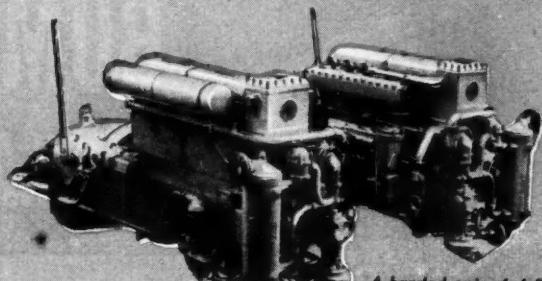
**BUILDERS OF LONDON'S BUSES**



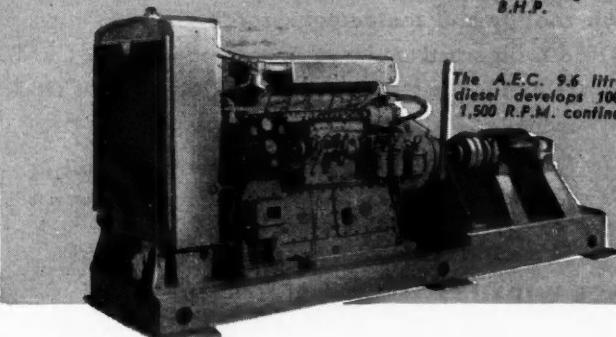
*A.E.C. 11.3 litre 6-cylinder horizontal diesel for Transit type bus.*



*A.E.C. 9.6 litre 6-cylinder vertical diesel for Road Transport work.*



*A paired pair of A.E.C. 6-cylinder marine diesels with an individual power rating of 100 S.H.P.*



*The A.E.C. 9.6 litre stationary diesel develops 100 S.H.P. at 1,500 R.P.M. continuous rating*

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OF CANADA, LTD.  
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Catherine Street West, Montreal

## British Gas Turbine Engine Only Experimental Model

Recent news releases provided exciting stories about the successful development of an automobile powered by a gas turbine engine. The impression created was that in the near future the internal combustion engine would be as obsolete as "Old Dobbin."

A clear-cut statement by Mr.

Maurice C. Wilks, chief engineer. The Rover Co., manufacturer of the Rover Gas Turbine Engine, points out that the vehicle and its power plant are still in the development stage.

He emphasized that the facts contained in the somewhat exaggerated news stories were "in fact what might be called a practical interim report on the progress of our work. We know we still have a long way to go before the gas turbine car becomes a marketable proposition, but this will show that we have gone some way on

the journey, and that the gas turbine car has some very attractive features.

"The present engine is really a piece of test bed apparatus and, in consequence, does not bear much resemblance to what the company has ultimately in mind for a motor car; either in power output, dimensions or weight. It would be a mistake to regard this particular engine as representing anything approaching finality. In any case, in any future 'production' car we would certainly not put the engine where one expects to find the back seat. That has been done purely for convenience in this case, and because the vehicle is, literally, a mobile test bed.

"This car does, however, demonstrate that many of the major problems have been solved, and that it is possible to build a vehicle with only two-pedal control — accelerator and brake.

"It is obviously The Rover Co.'s intention to produce a gas turbine engine car as a marketable proposition if and when that becomes practicable; in which case it certainly will be as good as—most probably better than—existing piston engine cars in respect of performance and weight. Probably, though, it will not be quite so good in respect of fuel consumption, but to balance that, the performance will be superb."

It also was pointed out that the present engine was designed to include a heat exchanger, but "as the design of this is one of the most difficult problems involved, its development is for the most part being done away from the engine; the initial engines being run without heat exchangers—in which condition their fuel consumption is more than twice what it would be in a good piston engine of equivalent power. With a heat exchanger, however, the gas turbine's fuel consumption comes down to within measurable distance of that of the conventional piston engine. Fuel may be petrol, paraffin or diesel oil.

"For a road vehicle the gas turbine offers two pedal controls; as there is no need for a clutch or manual gear change in the accepted sense. With a piston engine the problem is one of fit and wear; with the gas turbine there are few close fits and there is very little wear, but balance is a big problem, as it must be nearly perfect."

END



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*Body-Gard*  
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CUSTOM-BUILT FROM  
HI-TENSILE STEEL

### CHANNEL TYPE CONSTRUCTION

Flexible tooling and equipment assure economical prices and PROMPT DELIVERY on small or large quantities of Body-Gard Bumpers. They are available for the front and rear of all types of trucks, truck bodies, buses, coaches and all other commercial vehicles.

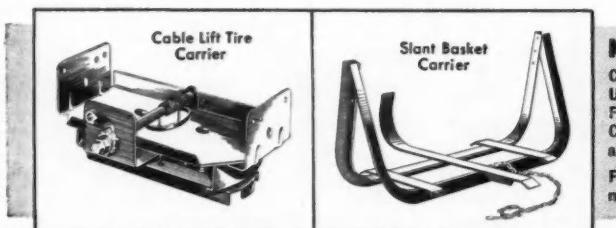
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how easy it is to order custom-built bumpers  
to your exact specifications.*

#### 5 FACE WIDTHS:

3½", 4½", 5½", 6"  
and 6½" wide

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**REGULAR**—With 3½" end form  
**FULL**—With end form up to 7½"  
**WRAP AROUND**—End form as deep  
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Cable Lift Carriers available in  
Under Frame, Side Mount and  
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Carriers, universal for any rim or  
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